

## Preaward Compliance Review Report for All Applicants and Recipients Requesting EPA Financial Assistance

Note: Read Instructions before completing form.

### I. A. Applicant/Recipient (Name, Address, City, State, Zip Code)

Name:

Address:

City:

State:  Zip Code:

B. DUNS No.

II. Is the applicant currently receiving EPA Assistance? ☐ Yes ☒ No

III. List all civil rights lawsuits and administrative complaints pending against the applicant/recipient that allege discrimination based on race, color, national origin, sex, age, or disability. (Do not include employment complaints not covered by 40 C.F.R. Parts 5 and 7.)

n/a

IV. List all civil rights lawsuits and administrative complaints decided against the applicant/recipient within the last year that allege discrimination based on race, color, national origin, sex, age, or disability and enclose a copy of all decisions. Please describe all corrective actions taken. (Do not include employment complaints not covered by 40 C.F.R. Parts 5 and 7.)

n/a

V. List all civil rights compliance reviews of the applicant/recipient conducted by any agency within the last two years and enclose a copy of the review and any decisions, orders, or agreements based on the review. Please describe any corrective action taken. (40 C.F.R. § 7.80(c)(3))

n/a

VI. Is the applicant requesting EPA assistance for new construction? If no, proceed to VII; if yes, answer (a) and/or (b) below.

☐ Yes ☒ No

a. If the grant is for new construction, will all new facilities or alterations to existing facilities be designed and constructed to be readily accessible to and usable by persons with disabilities? If yes, proceed to VII; if no, proceed to VI(b).

☐ Yes ☐ No

b. If the grant is for new construction and the new facilities or alterations to existing facilities will not be readily accessible to and usable by persons with disabilities, explain how a regulatory exception (40 C.F.R. 7.70) applies.

n/a

VII. Does the applicant/recipient provide initial and continuing notice that it does not discriminate on the basis of race, color, national origin, sex, age, or disability in its program or activities? (40 C.F.R. 5.140 and 7.95)

☒ Yes ☐ No

a. Do the methods of notice accommodate those with impaired vision or hearing?

☒ Yes ☐ No

b. Is the notice posted in a prominent place in the applicant's offices or facilities or, for education programs and activities, in appropriate periodicals and other written communications?

☒ Yes ☐ No

c. Does the notice identify a designated civil rights coordinator?

☒ Yes ☐ No

VIII. Does the applicant/recipient maintain demographic data on the race, color, national origin, sex, age, or handicap of the population it serves? (40 C.F.R. 7.85(a))

☒ Yes ☐ No

IX. Does the applicant/recipient have a policy/procedure for providing access to services for persons with limited English proficiency? (40 C.F.R. Part 7, E.O. 13166)

☒ Yes ☐ No

- X. If the applicant is an education program or activity, or has 15 or more employees, has it designated an employee to coordinate its compliance with 40 C.F.R. Parts 5 and 7? Provide the name, title, position, mailing address, e-mail address, fax number, and telephone number of the designated coordinator.**

n/a

- XI. If the applicant is an education program or activity, or has 15 or more employees, has it adopted grievance procedures that assure the prompt and fair resolution of complaints that allege a violation of 40 C.F.R. Parts 5 and 7? Provide a legal citation or Internet Address for, or a copy of, the procedures.**

n/a

**For the Applicant/Recipient**

I certify that the statements I have made on this form and all attachments thereto are true, accurate and complete. I acknowledge that any knowingly false or misleading statement may be punishable by fine or imprisonment or both under applicable law. I assure that I will fully comply with all applicable civil rights statutes and EPA regulations.

A. Signature of Authorized Official

Bridgette L Murray

B. Title of Authorized Official

Executive Director, ACTS

C. Date

03/25/2022

**For the U.S. Environmental Protection Agency**

I have reviewed the information provided by the applicant/recipient and hereby certify that the applicant/recipient has submitted all preaward compliance information required by 40 C.F.R. Parts 5 and 7; that based on the information submitted, this application satisfies the preaward provisions of 40 C.F.R. Parts 5 and 7; and that the applicant has given assurance that it will fully comply with all applicable civil rights statutes and EPA regulations.

A. \*Signature of Authorized EPA Official

B. Title of Authorized Official

C. Date

**\* See Instructions**

Instructions for EPA FORM 4700-4 (Rev. 06/2014)

General. Recipients of Federal financial assistance from the U.S. Environmental Protection Agency must comply with the following statutes and regulations.

Title VI of the Civil Rights Acts of 1964 provides that no person in the United States shall, on the grounds of race, color, or national origin, be excluded from participation in, be denied the benefits of, or be subjected to discrimination under any program or activity receiving Federal financial assistance. The Act goes on to explain that the statute shall not be construed to authorize action with respect to any employment practice of any employer, employment agency, or labor organization (except where the primary objective of the Federal financial assistance is to provide employment). Section 13 of the 1972 Amendments to the Federal Water Pollution Control Act provides that no person in the United States shall on the ground of sex, be excluded from participation in, be denied the benefits of, or be subjected to discrimination under the Federal Water Pollution Control Act, as amended. Employment discrimination on the basis of sex is prohibited in all such programs or activities. Section 504 of the Rehabilitation Act of 1973 provides that no otherwise qualified individual with a disability in the United States shall solely by reason of disability be excluded from participation in, be denied the benefits of, or be subjected to discrimination under any program or activity receiving Federal financial assistance. Employment discrimination on the basis of disability is prohibited in all such programs or activities. The Age Discrimination Act of 1975 provides that no person on the basis of age shall be excluded from participation under any program or activity receiving Federal financial assistance. Employment discrimination is not covered. Age discrimination in employment is prohibited by the Age Discrimination in Employment Act administered by the Equal Employment Opportunity Commission. Title IX of the Education Amendments of 1972 provides that no person in the United States on the basis of sex shall be excluded from participation in, be denied the benefits of, or be subjected to discrimination under any education program or activity receiving Federal financial assistance. Employment discrimination on the basis of sex is prohibited in all such education programs or activities. Note: an education program or activity is not limited to only those conducted by a formal institution. 40 C.F.R. Part 5 implements Title IX of the Education Amendments of 1972. 40 C.F.R. Part 7 implements Title VI of the Civil Rights Act of 1964, Section 13 of the 1972 Amendments to the Federal Water Pollution Control Act, and Section 504 of The Rehabilitation Act of 1973. The Executive Order 13166 (E.O. 13166) entitled; "Improving Access to Services for Persons with Limited English Proficiency" requires Federal agencies work to ensure that recipients of Federal financial assistance provide meaningful access to their LEP applicants and beneficiaries.

Items "Applicant" means any entity that files an application or unsolicited proposal or otherwise requests EPA assistance. 40 C.F.R. §§ 5.105, 7.25. "Recipient" means any entity, other than applicant, which will actually receive EPA assistance. 40 C.F.R. §§ 5.105, 7.25. "Civil rights lawsuits and administrative complaints" means any lawsuit or administrative complaint alleging discrimination on the basis of race, color, national origin, sex, age, or disability pending or decided against the applicant and/or entity which actually benefits from the grant, but excluding employment complaints not covered by 40 C.F.R. Parts 5 and 7. For example, if a city is the named applicant but the grant will actually benefit the Department of Sewage, civil rights lawsuits involving both the city and the Department of Sewage should be listed. "Civil rights compliance review" means any review assessing the applicant's and/or recipient's compliance with laws prohibiting discrimination on the basis of race, color, national origin, sex, age, or disability. Submit this form with the original and required copies of applications, requests for extensions, requests for increase of funds, etc. Updates of information are all that are required after the initial application submission. If any item is not relevant to the project for which assistance is requested, write "NA" for "Not Applicable." In the event applicant is uncertain about how to answer any questions, EPA program officials should be contacted for clarification. \* Note: Signature appears in the Approval Section of the EPA Comprehensive Administrative Review For Grants/Cooperative Agreements & Continuation/Supplemental Awards form.



# EPA KEY CONTACTS FORM

OMB Number: 2030-0020  
Expiration Date: 06/30/2024

**Authorized Representative:** *Original awards and amendments will be sent to this individual for review and acceptance, unless otherwise indicated.*

<b>Name:</b>	<b>Prefix:</b>	<b>First Name:</b> Bridgette	<b>Middle Name:</b>
	<b>Last Name:</b> Murray		<b>Suffix:</b>
<b>Title:</b>	Executive Director, ACTS		
<b>Complete Address:</b>			
<b>Street1:</b>	11811 East Freeway, Suite 240		
<b>Street2:</b>			
<b>City:</b>	Houston	<b>State:</b>	TX: Texas
<b>Zip / Postal Code:</b>	77029-1900	<b>Country:</b>	USA: UNITED STATES
<b>Phone Number:</b>	281-658-5392	<b>Fax Number:</b>	
<b>E-mail Address:</b>	blmacts@gmail.com		

**Payee:** *Individual authorized to accept payments.*

<b>Name:</b>	<b>Prefix:</b>	<b>First Name:</b> Bridgette	<b>Middle Name:</b>
	<b>Last Name:</b> Murray		<b>Suffix:</b>
<b>Title:</b>	Executive Director, ACTS		
<b>Complete Address:</b>			
<b>Street1:</b>	11811 East Freeway, Suite 240		
<b>Street2:</b>			
<b>City:</b>	Houston	<b>State:</b>	TX: Texas
<b>Zip / Postal Code:</b>	77029-1900	<b>Country:</b>	USA: UNITED STATES
<b>Phone Number:</b>	281-658-5392	<b>Fax Number:</b>	
<b>E-mail Address:</b>	blmacts@gmail.com		

**Administrative Contact:** *Individual from Sponsored Programs Office to contact concerning administrative matters (i.e., indirect cost rate computation, rebudgeting requests etc).*

<b>Name:</b>	<b>Prefix:</b>	<b>First Name:</b> Bridgette	<b>Middle Name:</b>
	<b>Last Name:</b> Murray		<b>Suffix:</b>
<b>Title:</b>	Executive Director, ACTS		
<b>Complete Address:</b>			
<b>Street1:</b>	11811 East Freeway, Suite 240		
<b>Street2:</b>			
<b>City:</b>	Houston	<b>State:</b>	TX: Texas
<b>Zip / Postal Code:</b>	77029-1900	<b>Country:</b>	USA: UNITED STATES
<b>Phone Number:</b>	281-658-5392	<b>Fax Number:</b>	
<b>E-mail Address:</b>	blmacts@gmail.com		



# EPA KEY CONTACTS FORM

**Project Manager:** *Individual responsible for the technical completion of the proposed work.*

**Name:** **Prefix:**  **First Name:**  **Middle Name:**

**Last Name:**  **Suffix:**

**Title:**

**Complete Address:**

**Street1:**

**Street2:**

**City:**

**State:**

**Zip / Postal Code:**

**Country:**

**Phone Number:**

**Fax Number:**

**E-mail Address:**

# BUDGET INFORMATION - Non-Construction Programs

OMB Number: 4040-0006  
Expiration Date: 02/28/2022

## SECTION A - BUDGET SUMMARY

Grant Program Function or Activity  (a)	Catalog of Federal Domestic Assistance Number  (b)	Estimated Unobligated Funds		New or Revised Budget		
		Federal (c)	Non-Federal (d)	Federal (e)	Non-Federal (f)	Total (g)
1. Enhanced Air Quality Monitoring for Communities	66.034	\$	\$	\$ 499,197.00	\$ 0.00	\$ 499,197.00
2.						
3.						
4.						
5. Totals		\$	\$	\$ 499,197.00	\$ 0.00	\$ 499,197.00

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# SECTION B - BUDGET CATEGORIES

6. Object Class Categories	GRANT PROGRAM, FUNCTION OR ACTIVITY				Total (5)
	(1)	(2)	(3)	(4)	
	Enhanced Air Quality Monitoring for Communities				
a. Personnel	\$ 52,260.00	\$	\$	\$	\$ 52,260.00
b. Fringe Benefits	11,497.00				11,497.00
c. Travel	348.00				348.00
d. Equipment	0.00				0.00
e. Supplies	3,100.00				3,100.00
f. Contractual	168,320.00				168,320.00
g. Construction	0.00				0.00
h. Other	248,055.00				248,055.00
i. Total Direct Charges (sum of 6a-6h)	483,580.00				\$ 483,580.00
j. Indirect Charges	15,617.00				\$ 15,617.00
k. TOTALS (sum of 6i and 6j)	\$ 499,197.00	\$	\$	\$	\$ 499,197.00
7. Program Income	\$ 0.00	\$	\$	\$	\$ 0.00

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SECTION C - NON-FEDERAL RESOURCES					
(a) Grant Program		(b) Applicant	(c) State	(d) Other Sources	(e)TOTALS
8.	Enhanced Air Quality Monitoring for Communities	\$ 0.00	\$ 0.00	\$ 0.00	\$ 0.00
9.					
10.					
11.					
12. TOTAL (sum of lines 8-11)		\$ 0.00	\$ 0.00	\$ 0.00	\$ 0.00

SECTION D - FORECASTED CASH NEEDS					
	Total for 1st Year	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
13. Federal	\$ 219,130.00	\$ 49,505.00	\$ 81,518.00	\$ 60,601.00	\$ 27,506.00
14. Non-Federal	\$ 0.00	0.00	0.00	0.00	0.00
15. TOTAL (sum of lines 13 and 14)	\$ 219,130.00	\$ 49,505.00	\$ 81,518.00	\$ 60,601.00	\$ 27,506.00

SECTION E - BUDGET ESTIMATES OF FEDERAL FUNDS NEEDED FOR BALANCE OF THE PROJECT					
(a) Grant Program		FUTURE FUNDING PERIODS (YEARS)			
		(b)First	(c) Second	(d) Third	(e) Fourth
16.	Enhanced Air Quality Monitoring for Communities	\$ 219,130.00	\$ 154,661.00	\$ 125,406.00	\$ 0.00
17.					
18.					
19.					
20. TOTAL (sum of lines 16 - 19)		\$ 219,130.00	\$ 154,661.00	\$ 125,406.00	\$ 0.00

SECTION F - OTHER BUDGET INFORMATION	
21. Direct Charges:	\$0 equip.-subawardees/contractor buy equip/monitor
22. Indirect Charges:	5% predetermined IDC rate of \$312,330 = \$15,617
23. Remarks:	\$15,617 in IDC based on 5% of modified total direct costs (total direct costs less distorting factors (\$150,000 of total \$225,000 in subawards excluded; \$21,250 in PC excluded). Modified Total Direct Costs are \$312,330 x .05 = \$15,617

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## Other Attachment File(s)

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\* Mandatory Other Attachment Filename:

Add Mandatory Other Attachment

Delete Mandatory Other Attachment

View Mandatory Other Attachment

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To add more "Other Attachment" attachments, please use the attachment buttons below.

Add Optional Other Attachment

Delete Optional Other Attachment

View Optional Other Attachment

## Application for Federal Assistance SF-424

\* 1. Type of Submission:

- ☐ Preapplication  
☒ Application  
☐ Changed/Corrected Application

\* 2. Type of Application:

- ☒ New  
☐ Continuation  
☐ Revision

\* If Revision, select appropriate letter(s):

\* Other (Specify):

\* 3. Date Received:

03/25/2022

4. Applicant Identifier:

5a. Federal Entity Identifier:

5b. Federal Award Identifier:

State Use Only:

6. Date Received by State:

7. State Application Identifier:

8. APPLICANT INFORMATION:

\* a. Legal Name: Achieving Community Tasks Successfully (ACTS)

\* b. Employer/Taxpayer Identification Number (EIN/TIN):

45-5172290

\* c. Organizational DUNS:

0621466070000

d. Address:

\* Street1: 11811 East Freeway, Suite 240

Street2:

\* City: Houston

County/Parish:

\* State: TX: Texas

Province:

\* Country: USA: UNITED STATES

\* Zip / Postal Code: 77029-1900

e. Organizational Unit:

Department Name:

ACTS

Division Name:

ACTS

f. Name and contact information of person to be contacted on matters involving this application:

Prefix:

Ms.

\* First Name:

Bridgette

Middle Name:

\* Last Name:

Murray

Suffix:

Title: Executive Director

Organizational Affiliation:

\* Telephone Number: 281-658-5392

Fax Number:

\* Email: blmacts@gmail.com

## Application for Federal Assistance SF-424

### \* 9. Type of Applicant 1: Select Applicant Type:

M: Nonprofit with 501C3 IRS Status (Other than Institution of Higher Education)

Type of Applicant 2: Select Applicant Type:

Type of Applicant 3: Select Applicant Type:

\* Other (specify):

### \* 10. Name of Federal Agency:

Environmental Protection Agency

### 11. Catalog of Federal Domestic Assistance Number:

66.034

CFDA Title:

Surveys, Studies, Research, Investigations, Demonstrations, and Special Purpose Activities  
Relating to the Clean Air Act

### \* 12. Funding Opportunity Number:

EPA-OAR-OAQPS-22-01

\* Title:

Enhanced Air Quality Monitoring for Communities

### 13. Competition Identification Number:

Title:

### 14. Areas Affected by Project (Cities, Counties, States, etc.):

1238-project areas affected.pdf

Add Attachment

Delete Attachment

View Attachment

### \* 15. Descriptive Title of Applicant's Project:

Defining Baseline Urban Air Toxics in Houston Through Hyperlocal Citizen Science Community Air  
Monitoring Networks

Attach supporting documents as specified in agency instructions.

Add Attachments

Delete Attachments

View Attachments

**Application for Federal Assistance SF-424****16. Congressional Districts Of:**

\* a. Applicant TX-018

\* b. Program/Project TX-018

Attach an additional list of Program/Project Congressional Districts if needed.

1240-Congressional Districts affected by p

Add Attachment

Delete Attachment

View Attachment

**17. Proposed Project:**

\* a. Start Date: 11/01/2022

\* b. End Date: 10/31/2025

**18. Estimated Funding (\$):**

* a. Federal	499,197.00
* b. Applicant	0.00
* c. State	0.00
* d. Local	0.00
* e. Other	0.00
* f. Program Income	0.00
* g. TOTAL	499,197.00

**\* 19. Is Application Subject to Review By State Under Executive Order 12372 Process?**

- ☐ a. This application was made available to the State under the Executive Order 12372 Process for review on .
- ☐ b. Program is subject to E.O. 12372 but has not been selected by the State for review.
- ☒ c. Program is not covered by E.O. 12372.

**\* 20. Is the Applicant Delinquent On Any Federal Debt? (If "Yes," provide explanation in attachment.)**☐ Yes ☒ No

If "Yes", provide explanation and attach

Add Attachment

Delete Attachment

View Attachment

**21. \*By signing this application, I certify (1) to the statements contained in the list of certifications\*\* and (2) that the statements herein are true, complete and accurate to the best of my knowledge. I also provide the required assurances\*\* and agree to comply with any resulting terms if I accept an award. I am aware that any false, fictitious, or fraudulent statements or claims may subject me to criminal, civil, or administrative penalties. (U.S. Code, Title 218, Section 1001)**

☒ \*\* I AGREE

\*\* The list of certifications and assurances, or an internet site where you may obtain this list, is contained in the announcement or agency specific instructions.

**Authorized Representative:**

Prefix: \* First Name: Bridgette

Middle Name:

\* Last Name: Murray

Suffix:

\* Title: Executive Director, ACTS

\* Telephone Number: 281-658-5392 Fax Number:

\* Email: blmacts@gmail.com

\* Signature of Authorized Representative: Bridgette L Murray \* Date Signed: 03/25/2022



## Project Narrative File(s)

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\* **Mandatory Project Narrative File Filename:**

Add Mandatory Project Narrative File

Delete Mandatory Project Narrative File

View Mandatory Project Narrative File

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To add more Project Narrative File attachments, please use the attachment buttons below.

Add Optional Project Narrative File

Delete Optional Project Narrative File

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## Maps Attachment

Figure 1. Location of Houston Data to Action communities and distribution of priority industrial facilities reporting release of ethylene oxide, 1,3-butadiene, formaldehyde, and acrolein to Toxic Release Inventory from 2017-2020 in Harris county for surveillance.

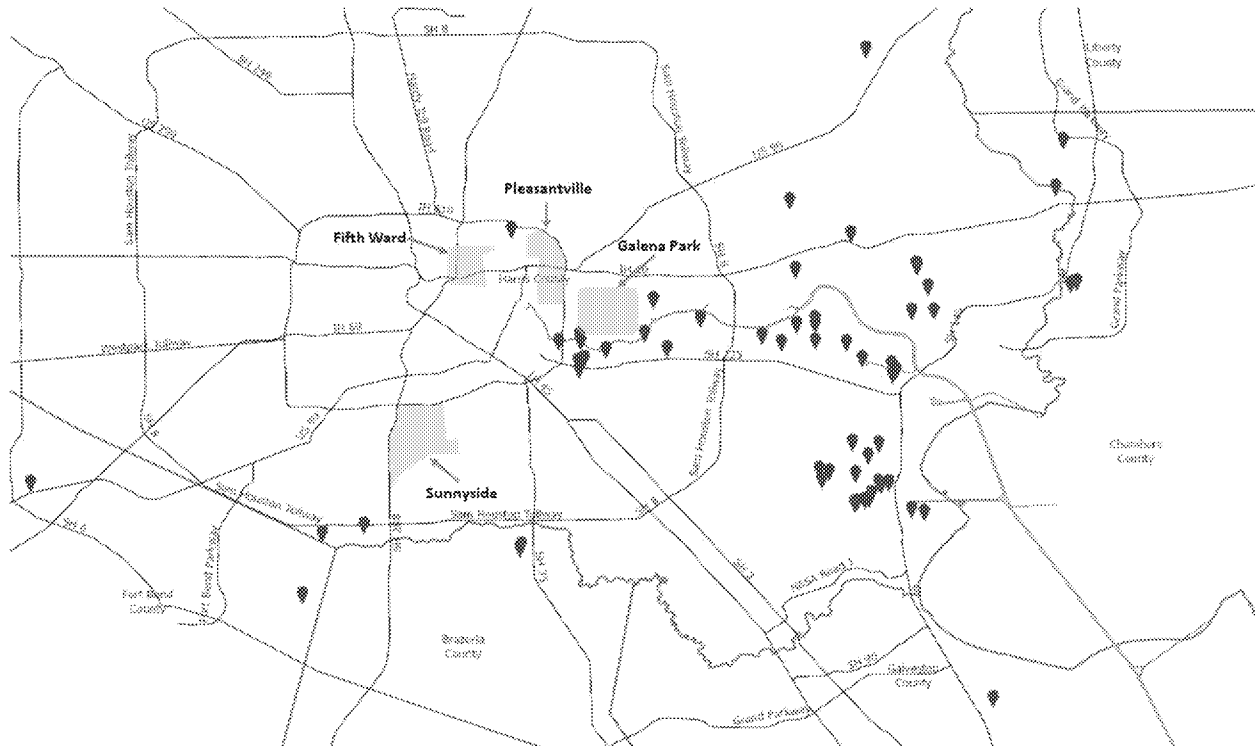
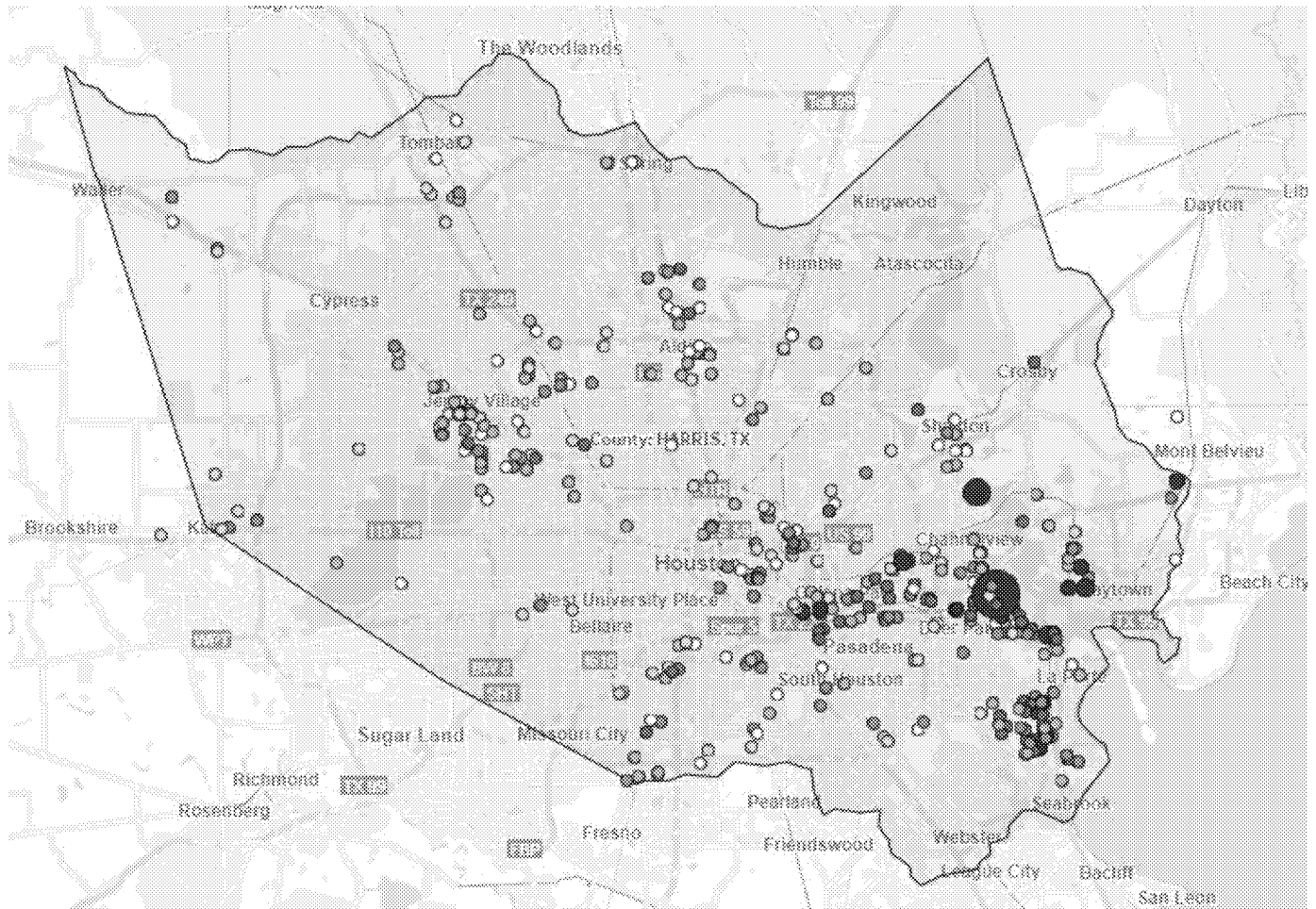


Figure 2. Distribution of All Releases in 2020 from Toxic Release Inventory Facilities in Harris County



*EPA COMMUNITY AIR  
MONITORING GRANT  
MANDATORY  
ATTACHMENT FILE*

*UEI: KAEBECS6PJP4*

1. QA STATEMENT
2. PROOF OF NON-PROFIT STATUS
3. COMMUNITY-BASED  
ORGANIZATION  
DOCUMENTATION (ACTS Fact  
Sheet)

## Section 5 – Quality Assurance Statement

ACTS Board Member, Rachel White, will be responsible for quality assurance (QA) and quality control (QC). For the past 2 years, she has led data analysis and QA QC of ACTS' existing community monitoring network. As a doctoral candidate in Epidemiology at the University of Texas School of Public Health (UTSPH) and Disaster Epidemiologist at Harris County Public Health, she has expertise in the general approach, scientific quality, and human subjects ethics required in the conduct and application of research. Ms. White has been responsible for small and large scale public health field work and QA. She has also worked closely with sensor manufacturer, Clarity, to ensure QA QC of monitoring data and sensor performance. Dr. Grace Tee Lewis, a Senior Health Scientist at EDF and Dr. Denae King, Associate Director of the Bullard Center for Environmental and Climate Justice at TSU have supported Ms. White and project partners from the onset of their respective community air monitoring endeavors. Drs. King and Tee Lewis will continue providing technical support and QA QC guidance to CBOs as part of this project.

The QA QC team also includes scientists from sensor manufacturers Entanglement Technologies and Clarity. Dr. Anthony Miller, CEO of Entanglement has a Ph.D. in Applied Physics from Stanford University and led development of the AROMA technology including the design of components, developing computer control and analysis software, designing and implementing experiments to improve the performance of the system. Aurelie Marcotte, Ph.D., is an atmospheric chemist and analytical instrumentation specialist with experience in air quality research projects. She has post-doctoral training from Department of Chemical and Environmental Engineering at Yale University and US EPA Office of Research and Development in North Carolina. Clarity's team includes Chief Operating Officer, Dr. Meiling Gao, who has extensive experience managing low-cost network sensors across the world. Katie Moore who currently supports work of Houston Data to Action community-led monitoring efforts. Levi Stanton who develops robust calibration methodologies and has led numerous projects funded by the U.S. Environmental Protection Agency using low-cost sensors across the world.

Entanglement Technologies will be responsible for all QA/ QC efforts during mobile monitoring with the AROMA-ETO analyzer. AROMA-ETO, is a thermal desorption, high-performance broadband cavity ringdown spectrometer, which provides part-per-trillion (pptv) detection limits on hazardous air pollutants such as 1,3-butadiene, ethylene oxide, and acrolein in ambient air. AROMA has been evaluated in the field, including side-by-side with regulatory analyzers, by organizations such as Bay Area Air Management District, EPA Region 9, and Environmental Security Technology Certification Program (ESTCP). Most recently, the EPA Office of Research and Development presented their results from an intercomparison study of ethylene oxide analyzers under relevant atmospheric conditions. They reported a method detection limit of 9.8 pptv for ethylene oxide with AROMA, which also outperformed other analytical methods in sensitivity, precision, accuracy, and performed well under varying relative humidities and interference gas concentrations.

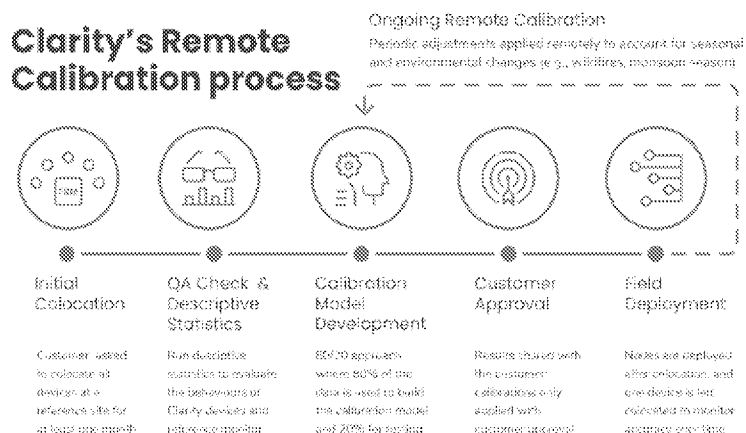
AROMA analyzers will be calibrated by Entanglement Technologies prior to deployment. This calibration will consist of triplicate measurements at five concentrations across the span range of the instrumentation and three instrument blanks. Multi-point calibration will be repeated until EPA Method TO-15A initial calibration criteria are achieved for the instrumentation. Method detection limits will be determined using seven or more replicates at ~5 standard deviations above instrument baseline noise as per EPA Method 301. After initial calibration, ongoing calibration verification will be performed using instrument blanks and Continuing Calibration Verification (CCV) measurements. At a minimum, these ongoing calibration measurements will be performed at the start and end of an instrument mobilization. During the initial mobile deployment, daily bracketing CCV measurements will be performed. CCV measurements will be performed using the calibration port via the built-in calibration point on the

analyzer. CCV acceptance criteria will be 30% as per EPA Method TO-15A. In the absence of failed CCV, annual instrument calibrations will be performed. The QASP is summarized in the following table:

Item	Frequency	Acceptance	Corrective Action
Initial Calibration	Instrument bring-up, after CCV fails, Major instrument work	5 Levels (Min) % RSD 30 with 2 compounds allowed out to 40% RSD	1. May repeat 1 point. 2. Examine Instrument 3. Repeat full calibration
Initial Calibration Verification (ICV)	After initial calibration	Recoveries within 70%-130%	1. Prepare new standard 2. Repeat initial calibration
Continuing Calibration Verification (CCV)	At the start and end of each operational day	70-130%	1. Compounds outside of 70-130 are flagged and narrated. 2. If more than 2 compounds are outside of 60-140% analysis is discarded unless it meets project needs 3. Repeat of initial calibration may be required
Laboratory Blank	After calibration standards, after very high concentrations, or when contamination present	All detections at or below MQL	1. Repeat blank until MQLs are reached. 2. Perform extended cleaning cycles

The AROMA-ETO has several Data Quality Indicators (DQIs), which monitor sampling flow, sampling pressure, core flow, core pressure, collector and focus temperatures, laser lock voltage and laser transmission amplitude during data collection, and then in data analysis the elution time and spectral match are used to validate analyzer data.

Clarity began collaboration with ACTS in 2019 and has already developed project-specific calibration models to ensure high data quality. Clarity will collaboratively establish and operationalize a continuous project QA Plan for the duration of the proposed project. This includes identification of appropriate colocation sites, characterization/review of sensor locations, and agreement on key metrics required for QC. The graphic below illustrates the process developed jointly with Clarity for calibration and currently in use with existing community air monitoring networks.



The Clarity team will continue to monitor calibration performance and incorporate additional colocation data to further refine the model performance, which will be applied to the data in real time. The Clarity Dashboard provides information about ongoing calibration and sensor performance and continuous support is available from the project management team. Further, the project team will work with Clarity on QA/QC procedures confirming data are of adequate quality to support project goals. Clarity will leverage existing logic checks and develop automatic QA/QC flags to identify and filter out invalid data.

A similar QA/QC approach will be applied to tVOC sensors. These sensors will be calibrated every 3-6 months using calibration kit and standard isobutylene gas or as defined by the manufacturer to ensure validity and precision of instrument performance and data quality.

INTERNAL REVENUE SERVICE  
P. O. BOX 2508  
CINCINNATI, OH 45201

DEPARTMENT OF THE TREASURY

Date: FEB 28 2013

ACHIEVING COMMUNITY TASKS  
SUCCESSFULLY  
C/O WARD S GRAY  
12607 CLAYGATE  
HOUSTON, TX 77047

Employer Identification Number:  
45-5172290  
DLN:  
17053160301042  
Contact Person:  
CARLY D YOUNG ID# 31494  
Contact Telephone Number:  
(877) 829-5500  
Accounting Period Ending:  
December 31  
Public Charity Status:  
170(b)(1)(A)(vi)  
Form 990 Required:  
Yes  
Effective Date of Exemption:  
March 19, 2012  
Contribution Deductibility:  
Yes  
Addendum Applies:  
No

Dear Applicant:

We are pleased to inform you that upon review of your application for tax exempt status we have determined that you are exempt from Federal income tax under section 501(c)(3) of the Internal Revenue Code. Contributions to you are deductible under section 170 of the Code. You are also qualified to receive tax deductible bequests, devises, transfers or gifts under section 2055, 2106 or 2522 of the Code. Because this letter could help resolve any questions regarding your exempt status, you should keep it in your permanent records.

Organizations exempt under section 501(c)(3) of the Code are further classified as either public charities or private foundations. We determined that you are a public charity under the Code section(s) listed in the heading of this letter.

Please see enclosed Publication 4221-PC, Compliance Guide for 501(c)(3) Public Charities, for some helpful information about your responsibilities as an exempt organization.

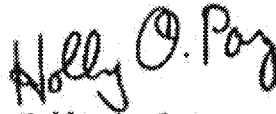
Letter 947 (DO/CG)



ACHIEVING COMMUNITY TASKS

We have sent a copy of this letter to your representative as indicated in your power of attorney.

Sincerely,

A handwritten signature in dark ink, appearing to read "Holly O. Paz". The signature is written in a cursive, slightly slanted style.

Holly O. Paz  
Director, Exempt Organizations  
Rulings and Agreements

Enclosure: Publication 4221-PC

Letter 947 (DO/CG)

# PLEASANTVILLE

## Achieving Community Tasks Successfully (ACTS)



Established: 2012

### Who is ACTS?

ACTS is a community-based nonprofit organization that seeks to leverage citizen science, training, and community engagement to address both environmental and social justice.



## Community Profile

- First planned Black Community in Houston
- 2 miles from Houston Ship Channel
- 98% Black and Hispanic
- Total Population (2019): 3,759
  - 30% under aged 18 years
  - 14% aged 65 years and over
- Median household income: \$40,796
  - Total households: 1,393
- 27% Families live below poverty level

## Community Action Plan Priorities

- 1) **Community Air Monitoring:** Develop a long-term plan that provides structure, ensures data accuracy and educates the community of Pleasantville regarding air quality.
- 2) **Baseline Health Survey:** Conduct a baseline community assessment for public health emergency response and disaster preparedness.
- 3) **Community Digital History:** Preserve our community history by creating a digital history of Pleasantville that documents both social and environmental history.
- 4) **Green Infrastructure:** Implement green projects that could assist with mitigation efforts related to storm water drainage, climate change impacts, cooling costs, and air quality.

### Pleasantville Achievements

- 1) ACTS Community air monitoring serves as EPA case study
- 2) Advocacy campaign in support of TCEQ placing regulatory air monitors in Pleasantville and 5th Ward
- 3) Addressing food insecurity during the pandemic by distributing food to Houstonians at Pleasantville community center
- 4) Challenging municipal settings designations to ensure historical contamination is cleaned up and not a risk to residents

ACTS website [www.acts-organization.org](http://www.acts-organization.org)

### Environmental Challenges



Manifest for Grant Application # GRANT13580003

Grant Application XML file (total 1):

1. GrantApplication.xml. (size 27052 bytes)

Forms Included in Zip File(total 6):

1. Form ProjectNarrativeAttachments\_1\_2-V1.2.pdf (size 16021 bytes)

2. Form SF424\_3\_0-V3.0.pdf (size 24226 bytes)

3. Form SF424A-V1.0.pdf (size 23429 bytes)

4. Form EPA4700\_4\_3\_0-V3.0.pdf (size 22772 bytes)

5. Form OtherNarrativeAttachments\_1\_2-V1.2.pdf (size 15890 bytes)

6. Form EPA\_KeyContacts\_2\_0-V2.0.pdf (size 37204 bytes)

Attachments Included in Zip File (total 9):

1. ProjectNarrativeAttachments\_1\_2 ProjectNarrativeAttachments\_1\_2-Attachments-1235-UEI KAEBECS6PJP4 QA STATEMENT.pdf application/pdf (size 360212 bytes)

2. ProjectNarrativeAttachments\_1\_2 ProjectNarrativeAttachments\_1\_2-Attachments-1234-UEI KAEBECS6PJP4 Project Narrative.pdf application/pdf (size 252257 bytes)

3. OtherNarrativeAttachments\_1\_2 OtherNarrativeAttachments\_1\_2-Attachments-1242-Optional Attachment.pdf application/pdf (size 4333336 bytes)

4. SF424\_3\_0 SF424\_3\_0-1240-Congressional Districts affected by program.docx application/vnd.openxmlformats-officedocument.wordprocessingml.document (size 16124 bytes)

5. SF424\_3\_0 SF424\_3\_0-1238-project areas affected.pdf application/pdf (size 103533 bytes)

6. SF424\_3\_0 SF424\_3\_0-AdditionalProjectTitle-1239-UEI KAEBECS6PJP4 Maps Attachment.pdf application/pdf (size 255929 bytes)

7. ProjectNarrativeAttachments\_1\_2 ProjectNarrativeAttachments\_1\_2-Attachments-1236-UEI KAEBECS6PJP4 Maps Attachment.pdf application/pdf (size 255929 bytes)

8. OtherNarrativeAttachments\_1\_2 OtherNarrativeAttachments\_1\_2-Attachments-1241-mandatory attachments.pdf application/pdf (size 768018 bytes)

9. ProjectNarrativeAttachments\_1\_2 ProjectNarrativeAttachments\_1\_2-Attachments-1237-mandatory attachments.pdf application/pdf (size 768018 bytes)

[ HYPERLINK

"https://apply07.grants.gov/apply/jsf/workspace/workspace.faces?workspaceId=WS00850076" \o

"Click to View Grant Opportunity Synopsis" ] - [ HYPERLINK

"https://apply07.grants.gov/apply/jsf/workspace/workspace.faces?workspaceId=WS00850076" \o

"Click to View Grant Opportunity Package" ]

**Enhanced Air Quality Monitoring for Communities**

**Environmental Protection Agency**

**Application Filing Name:** Defining Baseline Urban Air Toxics in Houston Through Hyperlocal Citizen Science

Community Air Monitoring Networks

Workspace ID: WS00850076

Workspace Owner: Bridgette Murray

UEI: KAEBCS6PJP4

Congressional Districts affected by program/project

TX-018

TX-002

TX-007

TX-008

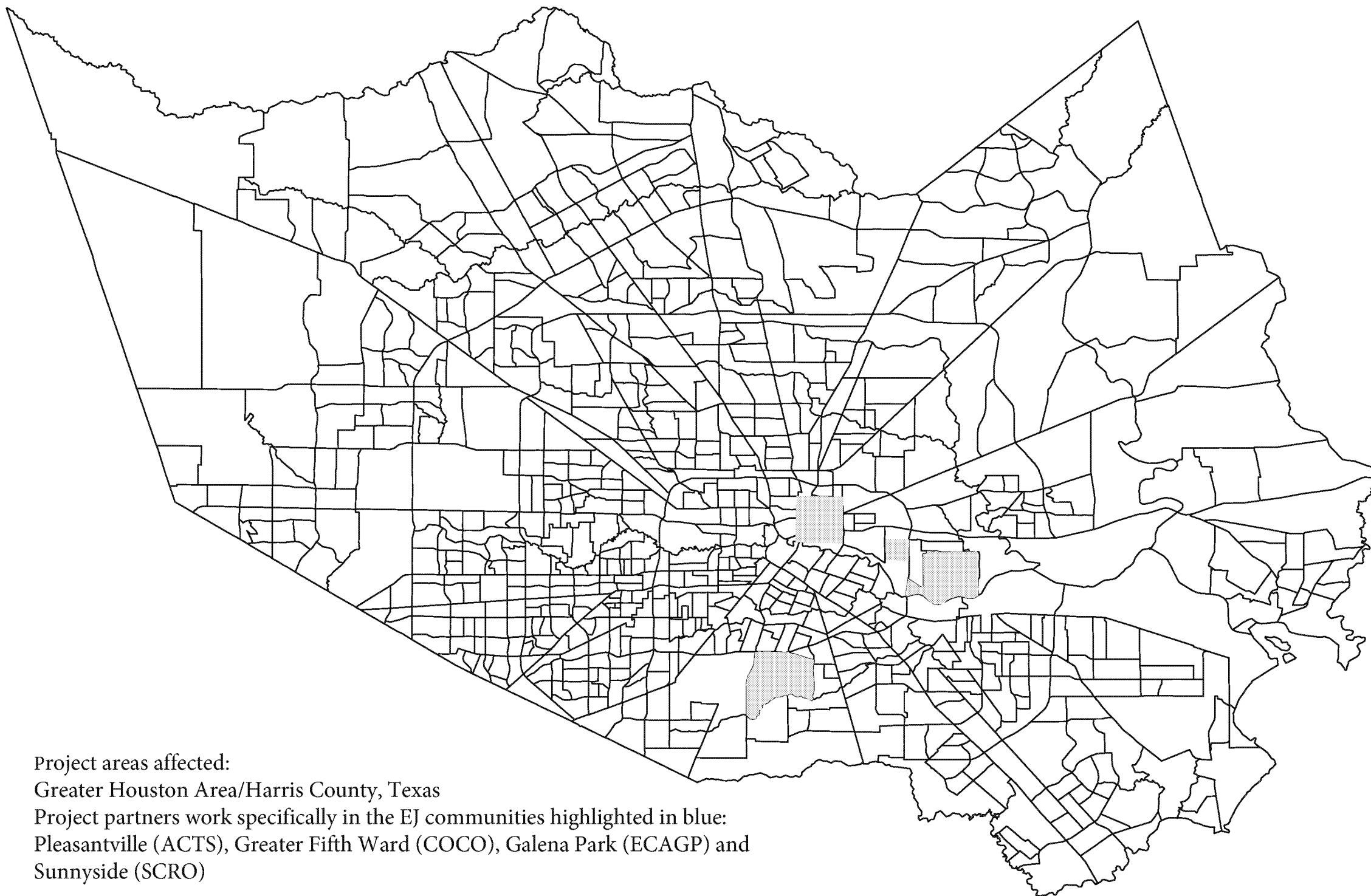
TX-009

TX-010

TX-022

TX-029

TX-036



Project areas affected:

Greater Houston Area/Harris County, Texas

Project partners work specifically in the EJ communities highlighted in blue:

Pleasantville (ACTS), Greater Fifth Ward (COCO), Galena Park (ECAGP) and  
Sunnyside (SCRO)

**Project Title:** Defining Baseline Urban Air Toxics in Houston Through Hyperlocal Citizen Science Community Air Monitoring Networks

**Applicant Organization:**

Primary Contact: Bridgette Murray  
Phone Number: 281-658-5392

**Achieving Community Tasks Successfully (ACTS)**

Address: 11811 East Freeway, Suite 240, Houston, TX 77029-1900  
Email: blmacts@gmail.com DUNS number: 062146607

**Set-Aside:** Community-based organization. ACTS (a 501c3 nonprofit with 80% of ACTS' board and senior leadership being current or former residents of the Pleasantville community) submits this application on behalf of Pleasantville, Sunnyside, Fifth Ward, and Galena Park communities. Since 2019, our community groups have worked together as "Houston Data to Action" team to share best practices because each partner organization has as its mission to address environmental hazards such as air pollution and related health impacts from industrial facilities, waste disposal sites, and port related transportation clustered in our respective Black and Hispanic neighborhoods.

**Description of Applicant Organization:** ACTS' mission is to leverage citizen science, training, and community engagement to address both environmental and social justice. Its ongoing relevant projects include community air monitoring of criteria pollutants, disseminating results of recently completed baseline health survey for public health and disaster preparedness planning, and stakeholder engagement with Port Houston advocating for environmental and climate justice for port communities.

**Project Partners:** Sunnyside Community Redevelopment Organization, Debra Walker; Coalition of Community Organizations, Rev. James Caldwell; Environmental Community Advocates of Galena Park, Juan Flores; Environmental Defense Fund, Grace Tee Lewis; Texas Southern University, Denae King; City of Houston Health Department, Loren Hopkins; Harris County Pollution Control Services, Latrice Babin

**Project Location:** This project will be conducted in Houston, Texas, with focus on Pleasantville, Sunnyside, Fifth Ward, and Galena Park communities represented by zip codes: 77020, 77021, 77026, 77029, 77033, 77051, 77229, 77547.

**Air Pollutant Scope:** Ethylene oxide, 1,3-Butadiene, Formaldehyde, Acrolein, criteria pollutants PM2.5 and nitrogen dioxides, and total volatile organics

**Budget Summary:**

EPA Funding Requested	Total Project Cost
\$499,197	\$499,197

**Project Period:** November 1, 2022 to October 31, 2025

**Short Project Description:** Harris County has the highest concentration of facilities emitting urban air toxics in the nation, yet there are no regulatory air monitors measuring the ones that pose the greatest threat to the health of our families. As citizen scientists we understand the role data plays in catalyzing change. The community-led monitoring we propose will fill gaps in our understanding of hazardous air pollutants where we live and enhance collaborations with local public health partners to make Houston stronger. From 2022-2025, we will address blind spots in community exposures by collectively quantifying and mapping air toxics (ethylene oxide, 1,3-butadiene, formaldehyde and acrolein) in residential neighborhoods and near permitted facilities in Harris County. In year 1, we will conduct a mobile air monitoring campaign consisting of a 20-day baseline survey and begin expanding capacity and scope of our existing hyper-local community air monitoring networks through investments in additional low-cost sensors, analytic and visualization tools. In years 2 and 3, we conduct two annual 8-day follow-up surveys, one emergency response survey, and organize citizen science training and community outreach. All aspects of this project will be community driven and owned, thus generating more actionable data leading to outcomes such as reduced cumulative exposures to improve community health, increased surveillance and response from local and state governments, community-led disaster planning, policy changes, permit reviews, enforcement, and contributing new data for national risk assessments and rulemakings.

## II. Workplan

### Section 1 – Project Summary and Approach

#### A. Overall Project

Achieving Community Tasks Successfully (ACTS) submits this grant proposal on behalf of our Pleasantville community, Sunnyside Community Redevelopment Organization (SCRO), Coalition of Community Organizations (COCO) of Fifth Ward, and Environmental Community Advocates of Galena Park (ECAGP) collectively as Houston Data to Action. Our environmental justice (EJ) communities have critical data gaps in understanding urban air toxic concentrations as single pollutants and an even greater need to understand the effect of multi-pollutant cumulative exposures and serious long-term health risks to our children, families, and neighbors. As Administrator Regan saw when he visited these communities on his Journey to Justice tour in November 2021, we are not content with existing environmental and health conditions in our neighborhoods. This grant affords us the opportunity to make investments in data driven citizen science and gather and own actionable monitoring data to benefit our communities. This objectives of this project are: 1) to define spatially baseline concentrations of ethylene oxide (EtO), formaldehyde, butadiene, and acrolein in our residential areas and near permitted “super emitter” industrial facilities in Harris County; 2) to increase the capacity of existing ACTS, SCRO, COCO, and ECAGP low-cost sensor networks by purchasing new monitors to expand coverage and scope of pollutants being measured and to increase investment in data communication and education; and 3) to strengthen collaboration with local governments and residents through data sharing.

To define baseline urban air toxic concentrations, we plan to conduct an initial mobile monitoring campaign using Entanglement Technologies AROMA analyzer equipped with the capacity to measure EtO, butadiene, and acrolein (air toxics) in the parts per trillion range. We will partner with the Houston Health Department (HHD) and Harris County Pollution Control (HC PCS) to measure formaldehyde levels around the same time period using their Picarro instruments. Entanglement Technologies has previously served the Houston community in the aftermaths of disasters like Hurricane Harvey (2017) and the ITC Deer Park tank fires (2019), collaborating with our partners, HHD, HC PCS, and Environmental Defense Fund (EDF) to measure acute air pollution and track sources impacting communities in our region. Entanglement will conduct the initial 20-day mobile campaign by covering 300 miles per day in City of Houston and Harris County residential neighborhoods and roads adjacent to the 55 industrial facilities as identified by current Toxic Release Inventory (TRI) as emitting the three air toxics of focus (See Figure 1 Map in Attachments). Entanglement will process and summarize monitoring data, generating maps with concentrations of air toxics aligned with road segments to show the spatial distribution of baseline concentrations daily and over the total sampling period. Sampling will be conducted during daytime hours and off-peak times to assess temporal variability. All data and work products generated as part of this grant will be owned by Houston Data to Action (D2A) community leaders. Entanglement will be responsible for all calibration, operation, maintenance of monitoring equipment, and quality assurance but give regular updates to Houston D2A community leaders during mobile monitoring. HHD and HC PCS have committed to provide time and resources in-kind to measure levels of formaldehyde in the same residential areas and near facilities of concern that may be identified. HHD and HC PCS will be asked to make the data they collect publicly available to all Houstonians. Further, Entanglement will conduct two subsequent annual 8-day follow-up surveys at the same time of year as the initial survey to assess changes in pollutant concentrations over time. Houston D2A community leaders will be consulted prior to follow-up surveys to define focus areas and hot spots that need particular attention during annual surveillance. Additionally, Entanglement will conduct mobile monitoring during a single emergency response event at the request of the community leaders during the three-year study period. Explosions and fires at industrial facilities occur with alarming frequency in Houston, with some having greater potential health threats to our frontline communities. This additional rapid response monitoring effort provides us timely data not dependent on TCEQ to deploy instruments from Austin or that lack detection limits to accurately measure and ascribe community exposures in emergency situations. Houston D2A community leaders will meet weekly during mobile monitoring campaigns and at least quarterly otherwise to discuss data use and dissemination efforts. They will share data with residents, local, state, and federal agencies to drive

actionable policy changes, increase accountability, and advocate for standards or rules around hazardous air pollutant exposures.

Over the past 2 years, our Houston D2A organizations have managed and operated successful air monitoring networks across the respective communities measuring criteria pollutants and total VOCs. We plan to address Objective 2 and 3 by building on our current network to expand each community's specific citizen science efforts at hyper-local air monitoring by investing in additional low-cost sensors, creating data analytic and communication tools, and expanding education and training of residents. ACTS will dedicate funds to hire a research analyst to create tools residents can easily use to interact with air quality data and strengthen understanding of how it is impacting their health. ACTS will conduct workshops to disseminate air toxics monitoring results and educate residents about corresponding health impacts. As primary applicant of the grant, we will utilize a portion of the funding toward administrative costs to implement the grant and ensure deliverables and reporting are met on time. SCRO will use its portion of the grant to purchase and install additional multi-pollutant low-cost sensors (the same sensor nodes currently used by HHD), thus broadening the reach of and increasing sustainability of citizen science efforts in their neighborhood. They will also use funds to conduct community meetings to share air toxics baseline and follow-up data, mobilize EJ efforts, and expand organizational capacity in data analysis and communication. COCO will dedicate its portion of grant funds to purchase the same model of total VOC monitor used by HC PCS, thereby expanding scope of monitored pollutants and potential collaboration with a local agency. They will also use funds to improve content and design of their website to share monitoring, lead exposures assessment results, disaster registry communications, and updates regarding cancer cluster to residents. Money to support their block captain program will be used for similar education and outreach efforts in-person as many residents lack access to computers. Lastly, ECAGP will purchase and install fixed site low-cost VOC sensors from different manufacturers and a dozen handheld wearable monitors increasing technological capacity to monitor new pollutants and adding rapid response capability to the community's toolbox. They have likewise allocated funding to support community meetings to share data and results and train residents. This is critical as Galena Park urgently needs resources to address the cumulative exposures from unmonitored air toxics as well as benzene and other VOCs from several adjacent industrial petrochemical facilities in concentrations threatening the health of residents for more than 20 years.

#### **B. Project Significance**

The Toxic Release Inventory (TRI) estimates 2.43 million pounds of urban air toxics ethylene oxide, 1,3-butadiene, formaldehyde, and acrolein were released in the Houston Galveston Brazoria (HGB) region from 2017-2020. Seventy-three percent (73%) of these releases were concentrated in Harris County from facilities clustered near the Houston Ship Channel (HSC) among Black and Hispanic frontline communities. EPA recognized in 2016 that continuously breathing ethylene oxide is 30 times more carcinogenic over one's lifetime than previously thought, yet availability of ambient monitoring data to understand frequency, duration, dose and the public health implications of the 63,000 lbs released adjacent to Harris County (2017-2020) fence-line communities is non-existent. In fact, multiple census tracts in Harris County had over the 100-in-a-million cancer risk level for ethylene oxide according to the 2017 AirToxScreen, EPA's assessment of risks from air toxics in the United States. Additionally, National Air Toxics Assessment (NATA, 2014) data indicated 89% of neighborhoods (census tracts) in the Houston metropolitan area had the highest cancer risk from formaldehyde. None of the 14 fixed site auto-gas chromatographs or 8 community air monitoring network canisters quantifying volatile organic compound (VOC) levels in the HGB region currently measure ethylene oxide, formaldehyde or acrolein. And, there is no air monitoring for these urban air toxics as part of the National Air Toxics Trend Stations or Urban Air Toxics Monitoring networks by the EPA. This is despite data from an EPA funded HHD formaldehyde monitoring study conducted in 2020 at three locations along the HSC showing exceedances of the EPA annual average cancer screening threshold at all sites. For our Houston D2A Galena Park community where the HHD monitor was sited, annual concentration were 5 times higher than the EPA screening level translating into one excess cancer per 140,000 people over a lifetime. The Texas Commission on Environmental Quality (TCEQ) has taken no steps to monitor ambient formaldehyde or ethylene oxide concentrations. In fact, in February 2022, TCEQ advocated for



increasing the current long-term ethylene oxide threshold from 1 ppb to 4 ppb reflecting political inclination toward industry rather than public health protective standards.

Historical redlining policies and lack of zoning in Houston fostered clustering of chemical manufacturing and refining facilities near our people of color, low-income port communities. These facilities produce highly reactive air toxics that can serve as ozone precursors, thus contributing to Houston's inability to meet clean air standards since the 1990s. Ambient benzene and related aromatic hydrocarbons are also a serious health threat on top of criteria pollutant exposures. Our Houston D2A joint monitoring is a catalyst for change. We will collect air toxic data and will share data with local government partners to identify hot spots to spur investigations of "super emitters" and enforcement of existing air permits. Further, we will spur better understanding of the complex mixtures and cumulative multi-pollutant exposures to mutagenic and carcinogenic compounds. Exposure data for our diverse Houston population can contribute to current review of 1,3-butadiene and formaldehyde under the Toxic Substances Control Act and ethylene oxide rulemaking for National Emissions Standards for Hazardous Air Pollutants. Our ground level measurements can assist NASA researchers in improving the accuracy of satellite remote sensing of air pollutants for the entire USA. Locally, it can establish baseline exposure levels for public health planning, emergency response, and more importantly to demand new facilities trying to move into our overburdened communities do not add to existing pollution levels already impacting the health of our families. Finally, our use of state-of-the-art AROMA-EtO instrument can serve as an example of how technological limitations in monitoring instrumentation can be circumvented to provide accurate single digit parts per trillion scale measurements addressing EPA detection limit and uncertainty concerns.

## **Section 2 – Community Involvement**

### **A. Community Partnerships**

In 2019, four Houston-based Community-Based Organizations (CBO) including ACTS, SCRO, COCO, and ECAGP participated in a "Data to Action" initiative supported by EDF and Texas Southern University (TSU). The intent was to develop community-driven action plans to address longstanding inequities and damages that decades of systemic environmental racism have wrought on black and Hispanic neighborhoods. Common environmental challenges included pollution from urban transportation and industrial sources, lack of infrastructure investments, social and economic stressors, health disparities, food deserts, and more. Several community leaders met regularly, cross-pollinated ideas and solutions, and developed action plans and a strong bond, which has motivated us to collaborate on this proposal as Houston D2A. All partner communities will benefit from joint monitoring efforts to establish baseline air toxic concentrations across Harris County. In addition to the outcomes outlined in the previous section, this project will benefit our communities by allowing us to make comparisons and determine why some neighborhoods have higher exposures and risks than others. This knowledge will help each CBOs formulate specific plans to minimize air pollution risks tailored to benefit the health of our residents. Further, most of our Houston D2A CBOs have purposefully chosen to use the same instruments used by both HHD and HC PCS in order to make comparisons across platforms and strengthen ties with local government partners. Our HHD and HC PCS partners have played a pivotal role in quality assurance by sharing their monitoring knowledge and technical expertise, assisting us in using city-managed regulatory monitors to calibrate low-cost community-based sensors, and providing additional reference grade air monitoring to address air quality concerns on request. HHD has even added our same low-cost sensors to their dashboard so they can monitor readings from our nodes directly alongside theirs. We hope to benefit from similar partnerships with HC PCS in the future as we adopt the same low cost instruments they use in their community air monitoring program. Our expectation is that this monitoring effort will assist HC PCS and HHD in addressing data gaps in air pollution, in informing surveillance and emergency response, and in empowering citizens to improve environmental conditions and support healthier communities. A key element of this proposal is that the data collected will be community owned. Having participated in numerous research studies where our community partners were not privy to data collected, even within our own neighborhoods, we are especially interested in receiving monitoring data in real time. We intend to share the monitoring data broadly with local public health officials and other partners.

Each of our Houston D2A Partners brings individual strengths that we will use to support our proposed work. Bridgette Murray and ACTS were the first CBO in Texas to deploy and operate their own air monitoring network. ACTS brings leadership to our partnership and as primary applicant, will monitor progress, and ensure grant objectives are accomplished. Ms. Murray has the innate ability as a leader to motivate others and navigate needed change using science, stakeholder engagement, and practical approaches. Sunnyside members led by Debra Walker are masterful community ambassadors and add value through connections with a variety of stakeholders from elected officials to members of the Greater Houston Local Emergency Planning Committee and their associated network of contacts. All but one of their existing air monitors are located at black churches throughout Sunnyside. Ms. Walker and her board members engage these congregations and can be called upon by partner organizations to amplify the work being done by all. Rev. James Caldwell and COCO are skilled at stakeholder and media engagement. Rev. Caldwell and COCO use social and traditional media as well as personal connections to motivate and engage a wide range of community stakeholders from schools, academic partners, everyday citizens, Port Houston, and government regulators. Juan Flores and ECAGP bring the technical skills to benefit our community partnership. Juan has led community engagement and recently air monitoring efforts at Air Alliance Houston and in the work ECAGP has done for several years. He has personally installed and deployed dozens of air monitors from different manufacturers across Houston, understands the nuances and limitations of different devices and data sharing platforms, and shares his technical expertise with all partners with ease. As a senior health scientist at EDF, Dr. Grace Tee Lewis has worked closely with CBO leaders and provides guidance and scientific expertise in support of their air monitoring and EJ endeavors. She is providing her expertise in-kind to community partners and benefits by ensuring success in their efforts. Dr. Denae King is Associate Director of the Bullard Center for Environmental and Climate Justice at TSU. Dr. King provides her expertise, guidance, and scientific advice to ensure successful implementation of all aspects of their community work. She and the Bullard Center benefit by advancing environmental and climate justice in Houston. EDF and TSU will also benefit when Houston D2A partners make their joint mobile monitoring data from this project publicly available. Finally, while not formally a partner, Dr. Tony Miller, of Entanglement Technologies, will play a pivotal role in ensuring scientific rigor and integration of CBO decision making in air toxic surveys. Entanglement benefits from the proposed work by showing scalable, practical application of the AROMA instrument to address complex air monitoring with precision which can be applied to meet environmental justice needs of communities.

## **B. Community Engagement**

Houston Data to Action CBOs have all used a community-based participatory approach to develop, design, deploy, and operate their existing air monitoring networks. Each CBO organized community meetings in-person prior to the pandemic and virtually the past two years to gather input from residents from developing objectives, selection of monitors, mapping to select locations to site monitors, and trainings on how to access and use the monitoring data. Feedback is gathered each step of the way and considered by leadership in decision making.

ACTS, SCRO, COCO, and ECAGP have contributed equally to the development of this grant. Initially, each organization will hold a community meeting to inform and educate their respective communities about the mobile monitoring campaigns, provide opportunities for residents to answer questions, and be engaged with the project at the start. Houston D2A CBO leaders will meet weekly with each other and Entanglement during the baseline survey and annual follow-ups. They will collaborate to make group decisions about areas that may need additional sampling and will manage communication with local government partners. CBO leaders will decide when the emergency response monitoring should be undertaken. After each round of data collection is completed and shared with Houston D2A Partners, it will be shared with local government partners, community stakeholders, civic organizations, academic partners, non-profits. Residents will be engaged at community meetings and through local civic club meetings, and each CBO will be responsible for making data publicly available. They will use a variety of methods including websites, mail, social media, constant contact distribution lists, or a platform they feel is most efficient to disseminate results.

Efforts to expand their respective monitoring networks will similarly rely on community-based participatory approach and integration of feedback in the same manner their existing networks were developed and implemented.

### C. Community-Based Organization Set-Aside

ACTS is a 501c3 nonprofit with 80% of ACTS' board and senior leadership being current or former residents of the Pleasantville community. ACTS' mission is to leverage citizen science, training, and community engagement to address both environmental and social justice. ACTS has been an effective community representative of Pleasantville and its residents. Their leaders attend City Council meetings and demand services and accountability for residents, represent the community on the SuperNeighborhood Alliance, host candidates running for elected office so residents can understand their platforms, advocate for its constituents as part of the Healthy Ports Coalition of communities, and represent Pleasantville in the HBCU-CBO Gulf Coast Equity Consortium, the District B Environmental Justice Committee, and the Asthma Coalition environmental justice working group. Throughout the pandemic and in response to hurricanes and winter storms, ACTS has organized monthly food and water distributions to those in need in their community, conducted a needs assessment and health survey to understand how they can better serve their community, organized COVID-19 testing and vaccination in their community, purchased tablets so residents without computer access could make doctor appointments at the onset of the pandemic and were not left behind due to lack of digital resource access. They also organize voter registration drives and community gatherings to commemorate civil rights leaders.

Each of the other Houston D2A CBO partners are also 501(c)3 organizations. Like ACTS, CBO leaders and board members were either born in their neighborhoods or have been long-term residents of the communities they serve. SCRO, COCO, and ECAGP have similarly served their communities by distributing food and water regularly during the pandemic, by organizing COVID-19 vaccination sites and testing, by assisting residents with home repairs after natural disasters, by organizing voter registration drives and vans to shuttle community members to polling places, and by providing a myriad of other services to residents. They also represent their communities on local emergency planning committees, civic clubs, on environmental working groups, and on climate justice leadership organizations.

### Section 3 – Environmental Justice and Underserved Communities

Our nation is dependent on the refineries and chemical plants in Houston to produce the raw materials and fuel that drive the US economy. Discriminatory redlining policies created nearly a century ago decided which areas in cities should be sacrificed to meet these needs, thus creating the overburdened EJ communities we represent. Indeed, in the last 3 years, two cancer clusters associated with legacy creosote contamination have been confirmed in Fifth Ward. Our four neighborhoods rank in the 93-99<sup>th</sup> percentile (%ile) nationally for proximity to superfund sites, 84-97%ile for proximity to hazardous waste facility, and 93-99%ile for being within 5km of a facility needing a risk management plan. As frontline communities, we are often first, worst, or most frequently impacted by disaster events, natural or industrial. Some of the worst air toxics releases during Hurricane Harvey were in Galena Park and near Pleasantville. Air toxic levels during the KMCO and ITC Deer Park tank fires were so high that shelter in place orders were issued. Our plan to conduct a rapid response monitoring effort during an emergency event will give us needed data to inform and protect our residents from potentially dangerous air toxic levels and it will serve as a model for community driven disaster response.

Houston Data to Action neighborhoods are more disadvantaged than 90-98% of all census tracts in our 8-county region ([www.HGBEnviroScreen.org](http://www.HGBEnviroScreen.org)). Nearly 100% of Pleasantville, Sunnyside, Fifth Ward and 88% of Galena Park residents are black or Hispanic, about a third of our populations lives below the poverty line, and nearly 40% lack health insurance. Prevalence of air pollution related chronic disease like asthma and heart disease are nearly 50% higher than US averages and percentage of adults with diabetes is more than double the national average of 11%. Life expectancy in our neighborhoods can be as much as 20-years lower than more affluent parts of the city.

Successful implementation of EJ action plan priorities and deployment of low-cost community air monitoring networks by Houston D2A CBOs has demonstrated the power of scientific data to catalyze greater collaboration with HHD and HC PCS in addressing environmental concerns that threaten health. Our Pleasantville, Sunnyside, Fifth Ward and Galena Park families will benefit from the robust hyperlocal baseline measurement of air toxics that will be community owned, transparent, actionable for government partners, and the public. Our baseline air toxics dataset will allow us to identify hotspots to prioritize populations at greatest health risk and

“super emitters” where additional surveillance and enforcement are needed. Annual follow-ups will aid us in understanding temporal variability in ambient concentrations and if directed efforts to prioritize facilities disproportionately releasing air toxics reduces exposures to high-risk populations, helping drive improvements in air toxic levels. Sharing these data with TSU’s Bullard Center for Environmental and Climate Justice will make this seminal monitoring data actionable and sustainable for all EJ communities in Houston and beyond.

#### **Section 4 – Environmental Results–Outcomes, Outputs and Performance Measures**

##### **A. Expected Project Outputs and Outcomes**

Project objectives of creating baseline air toxic concentration maps of Harris County, expanding capacity of our four (4) existing hyper-local community air monitoring networks, and data sharing will produce the following outputs and outcomes:

Objective	Output	Outcome
Conduct mobile monitoring to measure concentrations of urban air toxics in residential areas and near “super emitter” industrial facilities in Harris County	<ul style="list-style-type: none"> <li>• Maps of ground level EtO, butadiene, formaldehyde, acrolein levels in Harris County from 20-day survey using AROMA analyzer</li> <li>• Maps of urban air toxic level changes from two annual follow-up surveys</li> <li>• Emergency response monitoring of urban air toxics in EJ neighborhoods</li> <li>• Community owned datasets of air toxics levels at hyper-local scale</li> <li>• Quarterly meetings of project partners</li> </ul>	<ul style="list-style-type: none"> <li>• Define baseline urban air toxic exposures to Houston EJ community residents spatially and temporally</li> <li>• Increase understanding of complex mixtures of urban air toxics and cumulative exposure impacts to health</li> <li>• Educate residents about air pollution exposures and health impacts in their neighborhoods</li> <li>• Update policies defining acceptable population exposure limits for air toxics</li> <li>• Collaborate with local public health agencies to co-create thresholds triggering emergency response</li> <li>• Identification of industrial hot spots and super emitter facilities to prioritize investigations, compliance, and enforcement leading to reduced air toxic emissions</li> <li>• Create a community owned data repository of criteria pollutants and air toxics</li> <li>• Share urban air toxics data with federal agencies to improve accuracy of remote sensing of air pollution, contribute to rulemaking and exposure limit standards</li> <li>• Demonstrate use of scalable technology and protocols by CBOs to address limitations in urban air toxic monitoring instruments</li> </ul>
Expand community capacity by investing in additional monitoring equipment and development of tools	<ul style="list-style-type: none"> <li>• ECAGP purchase Quant AQ monitors</li> <li>• ECAGP purchase Flow 2 air monitors</li> <li>• SCRO purchase/install same monitors HHD uses</li> <li>• COCO/ECAGP purchase/install same VOC monitors HC PCS uses</li> <li>• Data analytic, visualization, and communication tools and educational materials developed</li> </ul>	<ul style="list-style-type: none"> <li>• Increase understanding of EPA criteria pollutants: PM, NO2 and VOCs in Galena Park</li> <li>• Broadens air monitoring coverage in community to understand community exposures</li> <li>• Community is more agile in ability to measure air pollutants using hand-held devices in emergencies</li> <li>• Citizen science training of residents and increased community engagement</li> <li>• Expand distributed network of same sensors HHD and HC PCS use to provide actionable air pollution data</li> <li>• Communities able to compare exposures across range of Houston neighborhoods</li> </ul>
Sharing data to enhance partnerships with local governments and communities	<ul style="list-style-type: none"> <li>• Maps from urban air toxic mobile monitoring and stationary community air monitoring networks shared with local, state, and federal government</li> <li>• Regular community meetings to disseminate air monitoring results and workshops to educate residents</li> <li>• CBOs hire staff and pay block captains to coordinate community outreach</li> <li>• SCRO/COCO expand communication using social media and website development</li> </ul>	<ul style="list-style-type: none"> <li>• Improved understanding of urban air toxics, chemical mixtures, cumulative impacts to EJ communities</li> <li>• Better informed disaster response, prioritization of policies, programs, and resource allocation</li> <li>• Consideration of cumulative impacts to communities in permit reviews</li> <li>• Residents empowered by citizen science and available data advocate for improvements in air quality and health standards</li> <li>• Knowledge sharing /serve as model which can be replicated by other EJ communities</li> </ul>

**B. Performance Measures and Plan**

ACTS will serve as project manager and track performance. Project partners will meet at least quarterly to remain on schedule. Performance measures include number of air monitors purchased, deployed and transmitting data to an online platform; number of days driven and mobile monitoring surveys completed by Entanglement; number of maps and datasets provided to ACTS; number of weekly meetings between community groups and Entanglement during mobile monitoring; number of times monitoring data is shared with HHD, HC PCS, state or federal agencies; number of quarterly meetings with project partners; number of workshops held by community organizations; number of attendees at trainings or workshops; number of contacts made by block captains. ACTS expects 100% of the monitors proposed in this project to be purchased, deployed, and data made publicly available online. ACTS expects all four mobile monitoring surveys to be performed by Entanglement. ACTS expects to hold a meeting every quarter with project partners and for a total of twenty-two community meetings to be held by ACTS, SCRO, COCO and ECAGP collectively, with the number of respective attendees described in the budget narrative. ACTS and COCO will set the expectation for the number of contacts to be made by block captains monthly. Increase in awareness among attendees of community trainings will be measured by pre- and post-training surveys. Community groups expect to see an increase in knowledge in >50% of attendees.

**C. Timeline and Milestones**

Milestone	YEAR 1				YEAR 2				YEAR 3			
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
Start of grant: Nov 1, 2022												
Hire key personnel: project manager, accounting, data analyst, EJ coordinator, web/communications	X											
Solicit, evaluate, sign contracts to conduct mobile monitoring of air toxics	X											
Purchase and install Clarity, Quant and Flow 2 monitors	X	X										
Quarterly report	X	X	X	X	X	X	X	X	X	X	X	
Initial community meetings to inform residents about grant and provide opportunities for engagement and feedback		X	X									
Initial 20-day air toxics baseline survey conducted		X	X									
Weekly meeting of project partners during mobile monitoring		X	X									
Quarterly meetings of Houston Data to Action project partners to discuss progress		X	X	X	X	X	X	X	X	X	X	X
Data sharing with HHD and Harris County PCS		X	X	X	X	X	X	X	X	X	X	X
Community workshops and trainings to share data and updates from air toxics surveys and community air monitoring networks; solicit feedback from residents				X	X	X	X	X	X	X	X	
Attendance at EJ conference to disseminate results					X				X			
Annual air toxics follow-up survey and weekly meetings with Data to Action project partners					X	X			X	X		
Air toxic emergency response mobile monitoring					X	X	X	X	X	X	X	
Project period ends; Final report												X

## **Section 5 – Quality Assurance Statement**

The quality assurance (QA) and quality control (QC) practices to be applied in the proposed project are included as an attachment in the mandatory attachment file.

## **Section 6 - Programmatic Capability and Past Performance**

### **A. Past Performance**

While ACTS, SCRO, COCO and ECAGP have not received federal funds in the past, we have managed and reported deliverables on many grants, including a Data to Action grant funded through Houston Endowment to develop environmental justice community action plans. CBOs worked with Environmental Defense Fund, Texas Southern University, HHD, and University of Texas Environmental Law Clinic to gather data, draw on technical expertise and guidance to successfully produce action plans outlining community priorities and objectives, methods to accomplish tasks, timelines, and budgets. Each CBO has further implemented two or more projects in their respective action plans, including all groups deploying community owned and operated air monitoring networks. ACTS receives two additional grants, one from Public Citizen and the other from the HBCU-CBO Gulf Coast Equity Consortium. ACTS formed the Healthy Port Communities Coalition (HPCC) to advocate for the health and well-being of communities surrounding the Houston Ship Channel with Public Citizen funding. The grant was renewed based on successful performance. ACTS collaborates with TSU and the Deep South Center for Environmental Justice to help underserved communities address environmental and health disparities on several funded initiatives. ACTS disseminated COVID-19 infographics weekly to meeting project deliverables and timelines and has developed a water justice plan.

Worth noting is that COCO, a community partner in this proposal, received a notice of award in February 2022 from National Academies of Science on a grant through the Gulf Research Program to create a disaster registry of Fifth Ward residents to disseminate information and respond to community needs during natural disasters or industrial events.

### **B. Reporting Requirements**

ACTS will be the primary party tasked with reporting on this grant. EDF who administered the Houston Endowment grant required a mid-point progress report and final report. The second half of grant funds were released to ACTS upon timely submission of the progress report. ACTS EJ action plan served as the final report and has been used successfully to seek funding to implement other projects. Public Citizen required annual reports that ACTS always completed meticulously. This sponsorship was renewed for two years after ACTS met all grant obligations. The HBCU-CBO Gulf Coast Equity Consortium required ACTS to communicate progress toward goals in quarterly meetings. ACTS leadership maintains a high standard for reporting, and all reports were successfully completed in a time manner.

### **C. Staff Expertise**

Bridgette L. Murray serves as the Executive Director of ACTS and founded the organization in 2013. Murray has a Master's degree in Operations Management. She is also a graduate of the Texas Organizing Project Board & Commissions Leadership Training and is a senior fellow at the American Leadership Forum in Community Development. In the Houston community, Murray serves as a member of the Port Commission Citizens Advisory Council - Port Houston, as well as the Houston Community College Bond Oversight Committee. Ms. Murray is also the president of Pleasantville Area Super Neighborhood Council #57.

Tracy Stephens serves as the Board Director and Research Coordinator for ACTS. He is a skilled community organizer and activist and has expertise in executive team leadership and flood and stormwater drainage. He serves as the ACTS research team coordinator for the HBCU-CBO Gulf Coast Equity Consortium. He also is a member of Harris County's Community Flood Resilience Task Force and the MIT Advisory Committee for Texas General Land Office. ACTS intends to hire administrative support should this proposal be successful who will be tasked with collecting information from subawardees. Additionally, ACTS and proposal partners have the full support and engagement of colleagues at EDF as well as TSU, who have managed a number of previous federal grants. Specifically, Dr. Grace Tee Lewis and Dr. Denae King will provide technical support in undertaking air monitoring, analysis and data sharing, assistance in managing partner meetings, and organizing project reporting.

**Section 7 – Budget****A. Budget Detail****Budget Table**

Line Item	Itemized Cost	EPA Funding
<b>Personnel</b>	\$5,000 B. Murray, Executive Director of ACTS (8% of effort of \$20,000 salary, \$1,666/year) \$37,500 To be hired, Program Manager (25% effort of \$50,000 salary, \$12,500/year) \$4,560 To be hired, Data Analyst (\$19/hr x 240 hrs over project period, \$1,520/year) \$2,500 To be hired, Clerical support (8% effort of \$10,000 salary, \$833/year) \$2,700 To be hired, Research Asst (\$15/hour x 180 hours over project period, \$900/year)	\$52,260
<b>Fringe Benefits</b>	~22% of salaries est for fringe (FICA, workers compensation, retirement, insurance, etc.)	\$11,497
<b>Travel</b>	\$348 for in-town personnel mileage (\$0.58/mile x 600 miles over project)	\$348
<b>Supplies</b>	\$2,000 for laptop for new program manager \$1,100 for software subscriptions for laptop and upgraded web domain to host monitoring data	\$3,100
<b>Contractual</b>	\$18,000 contract with accountant for reporting, paying invoices, based on market rates \$150,320 contract with Entanglement to evaluate and characterize sources of pollution	\$168,320
<b>Other</b>	\$425 for training manuals (17 manuals @ \$25/manual) \$900 for copying/printing of outreach materials (6,000 pages at \$0.15/page over project period) \$14,400 Participant Costs (PC) stipend for block captains (4 captains x \$1200 x 3 yrs) \$2,700 PC for refreshments at community meetings (~\$19/person x 35 attendees x 4 meetings) \$4,150 PC for incentives for meeting attendees (130 \$25 gift cards, 60 t-shirts @ \$15 ea.) \$480 for meeting room rental (\$120/meeting x 4 meetings) \$75,000 subaward Sunnyside Community Redevelopment Org for air monitoring program \$75,000 subaward Coalition of Community Organizations for air monitoring program \$75,000 subaward Environmental Community Advocates of Galena Park for air monitoring program	\$248,055
<b>Total Direct Cost</b>		\$483,580
<b>Indirect Cost</b>	5% of modified total direct costs (MTDC excludes PC (\$21,250) and only first \$25k of 3 subawards)	\$15,617
<b>TOTAL</b>		\$499,197

**B. Reasonableness of Costs (10)**

**Personnel - \$52,260.** Executive Director to provide oversight, ensure reporting and compliance requirements met. Program Manager to handle day-to-day implementation. Data analyst to use data generated from surveys to develop analytic tools, data visualization. Clerical support to prepare materials for meetings and purchase supplies. Research assistant to write reports and prepare materials. Board Members - VP, Cleophus Sharp; Secretary/Treasurer, Tracy Stephens; Analyst, Rachel White - to contribute in-kind effort (\$0) to oversee development of program, materials, and present results.

**Fringe - \$11,497.** Fringe is estimated at 22% of employee salaries and includes the actual fringe benefit costs incurred by each employee working on the project based on salary, selected benefits packages and other variables applicable to the individual employee and may include, but are not limited to the cost of leave, employee insurance, pensions and unemployment benefit plans.

**Travel - \$348.** Mileage to in-town meetings, presentations, trainings and to visit air monitors installed under this project for key personnel and ACTS board members at \$0.58/mile x 600 miles.

**Supplies - \$3,100.** \$2,000 for laptop and accessories for Program Manager. \$1,100 for software subscriptions for new laptop and upgraded web services to host air monitoring data.

**Contractual - \$168,320.** \$18,000 contract with an accounting firm to handle invoicing, financial reporting, and distribution of grant funds to subawardees (\$31/hour X 16 hrs/mo. X 36 mo). \$150,320 contract with Entanglement to define and map baseline concentrations of ethylene oxide, 1,3-butadiene, acrolein, and formaldehyde during initial 20-day baseline survey and in three subsequent 8-day follow up surveys.

**Other - \$248,055.** \$425 to print/bind training manuals (\$25/manual x 17) to be retained by ACTS to train community on air monitoring. \$900 for print/copy services (\$0.15 x 6,000 pages) to print flyers/materials to advertise community meetings and print handouts for attendees. \$14,400 in participant costs (PC) stipends (\$1,200/block captain/year x 4 block captains x 3 years) to outreach to population not online and encourage community meeting attendance. \$2,700 for PC refreshments (\$19/person x 35 attendees x 4 meetings) and

\$4,150 for PC incentives (\$25/gift card x 130 cards + \$15/t-shirt x 60 shirts) to incentivize attendance at community meetings. \$480 for room rental (\$120/meeting x 4 meetings) to host meetings. \$225,000 in subawards (\$75k each to SCRO, COCO, ECAGP).

**SCRO Personnel - \$0.** Board Members of SCRO - President Debra Walker, VP Jo Ann Jones-Burbridge, Secretary Claudette Edwards, Treasurer Henry Price - will contribute in-kind effort (\$0) to oversee air monitoring program and present results.

**SCRO Travel - \$2,870.** For conferences and in-person mileage reimbursement expenses.

Expense	Amount
<b>In-town Mileage @ \$0.58/mile x 1,500 miles</b> for SCRO Board to visit air monitoring equipment to ensure functionality and travel to community meetings regarding air quality monitoring activities.	<b>\$870</b>
<b>Domestic travel outside of Texas</b> for two SCRO board members for two nights to attend an EJ conference like the National EJ Conference in DC in March.	
Airfare @ \$325/trip x 2 travelers (based on current google search)	\$650
Lodging @ \$258/night/person (2 nights, 2 travelers) based on GSA rate for DC in March	\$1,032
Meals & Incidentals @ \$79/day/person (2 days, 2 travelers) based on GSA rate for DC in March	\$316

**SCRO Supplies - \$11,766.** \$10,800 for 3 Clarity Air Monitors for PM and NOx, a 3-year data license service subscription, dashboard, and support package (\$3,600/monitor x 3). \$966 for pens, clipboards, hand sanitizer and other office supplies for community meetings.

**SCRO Contractual - \$44,900.** \$23,400 to contract research analyst for 10 hrs/week at \$15/hr to collect and analyze data, prepare reports and conduct presentations for 156 weeks. \$15,600 to contract with EJ Outreach Coordinator to engage with community residents, faith-based institutions, government, business, etc. (\$15/hr for 10 hrs/week for 104 weeks). \$2,900 for independent contractor to maintain website and social media (\$15/hr for 5 hrs/week for 38 weeks). \$3,000 for independent contractor to install 3 air monitors. Based on past rates, each installation will be \$1,000 including supplies.

**SCRO Other - \$9,180.** \$3,750 PC for refreshments (\$21/person x 20 people x 9 meetings) and \$1,800 for PC gift cards (\$25/gift card x 72 residents) for attendance at community meetings. \$3,600 for room rental (\$400/meeting x 9 meetings) for community meetings.

**SCRO Indirect Cost - \$6,314.** Indirect cost rate is based on 10% de minimis of MTDC (excluding PC).

**COCO Personnel - \$0.** Board members and key personnel of COCO - Rev. James Caldwell and Daniella Flanagan - will contribute in-kind effort (\$0) to oversee program and present results.

**COCO Travel - \$160.** Board members and key personnel will travel in-town to visit air monitoring equipment to ensure functionality and travel to related community meetings (\$0.58x275 mi.).

**COCO Equipment - \$14,600.** COCO to purchase one SPOD air monitor and related accessories and service to monitor total VOCs in their air and provide information to community.

**COCO Supplies - \$900.** COCO to purchase laptop and accessories to run air monitor software.

**COCO Contractual - \$36,600.** (1) research analyst to collect and analyze data from the air monitor, prepare reports and conduct data presentations (\$15/hr, for 10 hrs/week, for 152 weeks for a total of \$22,800). (2) independent contractor for communications and clerical tasks (\$15/hr, for 10 hrs/week for 80 weeks for a total of \$12,000). (3) contractor to upgrade COCO website to include air monitor results (\$16/hr for 5 hrs/week for 10 weeks for a total of \$800). (4) contractor to install air monitor at \$1,000 (including supplies) for a total of \$1,000 (spot purchase).

**COCO Other - \$18,974.** \$474 for PC for mileage reimbursement for block captains (\$0.58 x 817 miles) to travel in-town to community meetings and air monitoring trainings. \$18,000 for PC stipends (\$1,200/block captain/year x 5 block captains x 3 years) to contact offline population to encourage attendance. \$500 for PC refreshments (\$166/meeting x 3 meetings) to encourage attendance.

**COCO Indirect cost - \$3,766.** Indirect cost rate is based on 10% de minimis of MTDC.

**ECAGP Personnel - \$0.** Board members of ECAGP - President Cruz Hinojosa, VP Juan Flores, Secretary/Treasurer Maria Barraza - to contribute in-kind effort (\$0) to oversee program, present results.

**ECAGP Travel - \$6,812.** Reimbursement will be based on actual expenses.



Expense	Amount
<b>In-town Mileage @ \$0.58/mile x 1,400 miles</b> for board to visit air monitoring equipment to ensure functionality and travel to community meetings regarding air quality monitoring activities.	<b>\$812</b>
<b>Domestic travel outside of Texas</b> board members to make two 2-night trips to attend an EJ conference like the National EJ Conference in DC in March.	
Airfare @ \$326/trip x 3 travelers, 2 trips (based on current google search)	\$1956
Lodging @ \$258/night/person (2 nights, 3 travelers, 2 trips) based on GSA rate for DC in March	\$3,096
Meals & Incidentals @ \$79/day/person (2 days, 3 travelers, 2 trips) based on GSA rate DC in Mar	\$948

**ECAGP Equipment - \$17,000.** Two SPOD air monitors and related accessories to monitor total volatile organic compounds (\$6,000 x 2 monitors plus \$2,500 in related accessories/service per monitor).

**ECAGP Supplies - \$14,051.** \$7,500 for three (\$2,500/monitor) Quant AQ air monitors and accessories to monitor air quality. \$2,388 for twelve (\$199/monitor) Flow 2 air monitors for rapid response and educational purposes at schools. \$4,163 for meeting supplies such as pens, clipboards, hand sanitizer.

**ECAGP Contractual - \$15,000.** ECAGP to contract \$10,000 with a data analyst to collect and analyze data from the air monitor, prepare reports and conduct data presentations. ECAGP will contract with independent contractor to install air monitor. Installation will be \$1,000 per monitor (including supplies) for a total of \$5,000 (spot purchase).

**ECAGP Other - \$17,300.** \$3,000 for PC refreshments (\$20/person x 25 people x 6 meetings) to encourage attendance. \$1,800 for PC incentives (\$25 gift card x 72 gift cards) to encourage attendance. \$5,000 for room rental (\$825/meeting x 6 meetings) to host community meetings. \$2,500 in print/copy services (\$0.50/page x 5,000 pages) to print handouts, print and bind training materials. \$5,000 in advertisement costs for digital, print, radio advertisements to let community know about air monitors and community meetings.

**ECAGP Indirect cost - \$4,837.** Indirect cost rate is based on 10% de minimis of MTDC.

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**Indirect cost - \$15,617.** Indirect cost rate is based on 5% of modified total direct costs (total direct costs less distorting factors (\$150,000 of total \$225,000 in subawards excluded; \$21,250 in PC excluded). Modified Total Direct Costs are \$312,330 x .05 = \$15,617. Five percent is less than the allowed 10% de minimis for nonprofits.

**C. Expenditure of Awarded Funds - ACTS** to develop written procedures to ensure funds expended timely and efficiently and ensure subawardees do the same by holding monthly meetings with subawardees. ACTS expects to expend a greater proportion of funds in year one compared to years two and three with the purchase of air monitoring equipment and supplies. Monthly, ACTS will verify rate of spend is in line with expectations.

## Section 5 – Quality Assurance Statement

ACTS Board Member, Rachel White, will be responsible for quality assurance (QA) and quality control (QC). For the past 2 years, she has led data analysis and QA QC of ACTS' existing community monitoring network. As a doctoral candidate in Epidemiology at the University of Texas School of Public Health (UTSPH) and Disaster Epidemiologist at Harris County Public Health, she has expertise in the general approach, scientific quality, and human subjects ethics required in the conduct and application of research. Ms. White has been responsible for small and large scale public health field work and QA. She has also worked closely with sensor manufacturer, Clarity, to ensure QA QC of monitoring data and sensor performance. Dr. Grace Tee Lewis, a Senior Health Scientist at EDF and Dr. Denae King, Associate Director of the Bullard Center for Environmental and Climate Justice at TSU have supported Ms. White and project partners from the onset of their respective community air monitoring endeavors. Drs. King and Tee Lewis will continue providing technical support and QA QC guidance to CBOs as part of this project.

The QA QC team also includes scientists from sensor manufacturers Entanglement Technologies and Clarity. Dr. Anthony Miller, CEO of Entanglement has a Ph.D. in Applied Physics from Stanford University and led development of the AROMA technology including the design of components, developing computer control and analysis software, designing and implementing experiments to improve the performance of the system. Aurelie Marcotte, Ph.D., is an atmospheric chemist and analytical instrumentation specialist with experience in air quality research projects. She has post-doctoral training from Department of Chemical and Environmental Engineering at Yale University and US EPA Office of Research and Development in North Carolina. Clarity's team includes Chief Operating Officer, Dr. Meiling Gao, who has extensive experience managing low-cost network sensors across the world. Katie Moore who currently supports work of Houston Data to Action community-led monitoring efforts. Levi Stanton who develops robust calibration methodologies and has led numerous projects funded by the U.S. Environmental Protection Agency using low-cost sensors across the world.

Entanglement Technologies will be responsible for all QA/ QC efforts during mobile monitoring with the AROMA-ETO analyzer. AROMA-ETO, is a thermal desorption, high-performance broadband cavity ringdown spectrometer, which provides part-per-trillion (pptv) detection limits on hazardous air pollutants such as 1,3-butadiene, ethylene oxide, and acrolein in ambient air. AROMA has been evaluated in the field, including side-by-side with regulatory analyzers, by organizations such as Bay Area Air Management District, EPA Region 9, and Environmental Security Technology Certification Program (ESTCP). Most recently, the EPA Office of Research and Development presented their results from an intercomparison study of ethylene oxide analyzers under relevant atmospheric conditions. They reported a method detection limit of 9.8 pptv for ethylene oxide with AROMA, which also outperformed other analytical methods in sensitivity, precision, accuracy, and performed well under varying relative humidities and interference gas concentrations.

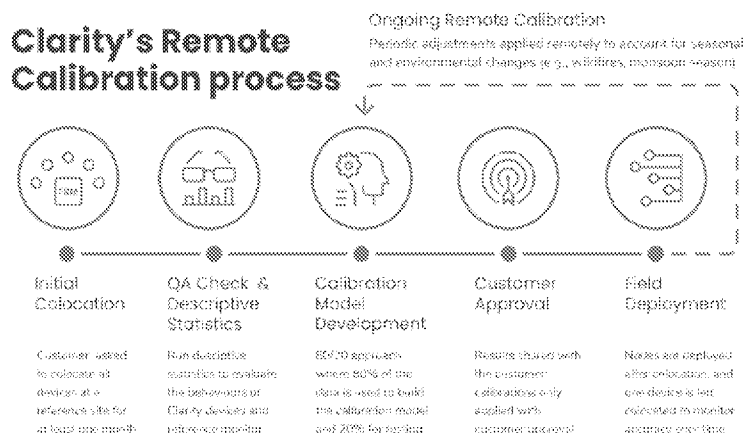
AROMA analyzers will be calibrated by Entanglement Technologies prior to deployment. This calibration will consist of triplicate measurements at five concentrations across the span range of the instrumentation and three instrument blanks. Multi-point calibration will be repeated until EPA Method TO-15A initial calibration criteria are achieved for the instrumentation. Method detection limits will be determined using seven or more replicates at ~5 standard deviations above instrument baseline noise as per EPA Method 301. After initial calibration, ongoing calibration verification will be performed using instrument blanks and Continuing Calibration Verification (CCV) measurements. At a minimum, these ongoing calibration measurements will be performed at the start and end of an instrument mobilization. During the initial mobile deployment, daily bracketing CCV measurements will be performed. CCV measurements will be performed using the calibration port via the built-in calibration point on the

analyzer. CCV acceptance criteria will be 30% as per EPA Method TO-15A. In the absence of failed CCV, annual instrument calibrations will be performed. The QASP is summarized in the following table:

Item	Frequency	Acceptance	Corrective Action
Initial Calibration	Instrument bring-up, after CCV fails, Major instrument work	5 Levels (Min) % RSD 30 with 2 compounds allowed out to 40% RSD	1. May repeat 1 point. 2. Examine Instrument 3. Repeat full calibration
Initial Calibration Verification (ICV)	After initial calibration	Recoveries within 70%-130%	1. Prepare new standard 2. Repeat initial calibration
Continuing Calibration Verification (CCV)	At the start and end of each operational day	70-130%	1. Compounds outside of 70-130 are flagged and narrated. 2. If more than 2 compounds are outside of 60-140% analysis is discarded unless it meets project needs 3. Repeat of initial calibration may be required
Laboratory Blank	After calibration standards, after very high concentrations, or when contamination present	All detections at or below MQL	1. Repeat blank until MQLs are reached. 2. Perform extended cleaning cycles

The AROMA-ETO has several Data Quality Indicators (DQIs), which monitor sampling flow, sampling pressure, core flow, core pressure, collector and focus temperatures, laser lock voltage and laser transmission amplitude during data collection, and then in data analysis the elution time and spectral match are used to validate analyzer data.

Clarity began collaboration with ACTS in 2019 and has already developed project-specific calibration models to ensure high data quality. Clarity will collaboratively establish and operationalize a continuous project QA Plan for the duration of the proposed project. This includes identification of appropriate colocation sites, characterization/review of sensor locations, and agreement on key metrics required for QC. The graphic below illustrates the process developed jointly with Clarity for calibration and currently in use with existing community air monitoring networks.



The Clarity team will continue to monitor calibration performance and incorporate additional colocation data to further refine the model performance, which will be applied to the data in real time. The Clarity Dashboard provides information about ongoing calibration and sensor performance and continuous support is available from the project management team. Further, the project team will work with Clarity on QA/QC procedures confirming data are of adequate quality to support project goals. Clarity will leverage existing logic checks and develop automatic QA/QC flags to identify and filter out invalid data.

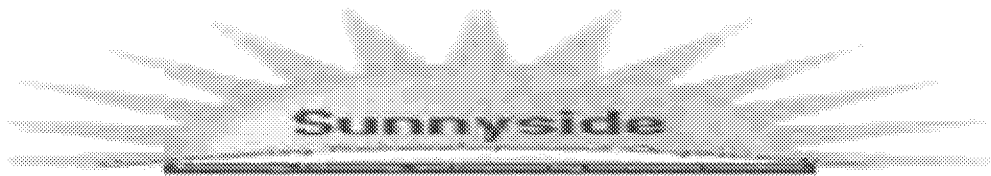
A similar QA/QC approach will be applied to tVOC sensors. These sensors will be calibrated every 3-6 months using calibration kit and standard isobutylene gas or as defined by the manufacturer to ensure validity and precision of instrument performance and data quality.

*EPA COMMUNITY AIR  
MONITORING GRANT  
OPTIONAL  
ATTACHMENT FILE*

*UEI: KAEBECS6PJP4*

1. PARTNERSHIP LETTERS/LETTERS OF SUPPORT
2. RESUMES OF KEY PERSONNEL
3. CBO STUDY AREA INFORMATION

# PARTNERSHIP LETTERS



March 17, 2022

Bridgette Murray  
 Director, Achieving Community Tasks Successfully (ACTS)  
 8701 S. Gessner Rd  
 Houston, TX 77074

Dear Ms. Murray:

The Sunnyside Community Redevelopment Organization is pleased to support your proposal, "Defining Baseline Urban Air Toxics in Houston Through Hyperlocal Citizen Science Community Air Monitoring Networks," in response to EPA's Request for Applications opportunity, EPA-OAR-OAQPS-22-01. Enhanced Air Quality Monitoring for Communities Grant, RFA No. EPA-OAR-OAQPS-22-01.

We recognize the significant efforts that ACTS and the other project partners have made over the years in raising awareness around air quality and believe that this proposal would address critical gaps in our understanding of compounds such as ethylene oxide and formaldehyde.

Sunnyside Community Redevelopment Organization, a community ambassador, mission is to seek to create a healthy and sustainable community by advocating, educating and empowering community residents. Our vision is to monitor, correct and make equitable the environmental problems and other high-risk factors that affect the wellbeing of our community. Established in 2017, Sunnyside Community Redevelopment Organization has deployed community air monitors, provided the residents hurricane preparedness information, collaborated with the Data to Action environmental justice community partners and the local public health and pollution control agencies.

Sunnyside Community Redevelopment Organization in partnership with the Houston Data to Action environmental justice community organizations will seek to define baseline concentrations of carcinogenic air toxics in the Sunnyside community. We will expand our existing air monitoring network through the purchase of additional low-cost sensors, teach the Sunnyside residents about health impacts of air toxics and criteria pollutions, and collaborate with local public health and pollution control agencies to define community exposures for disaster response and public health emergency planning.

Sunnyside Community Redevelopment Organization has been actively involved with the Data to Action environmental justice partners and other community organizations since 2019. We have been engaged in community advocacy to improve and maintain clean and healthy environments. Our communities cannot wait any longer for real and tangible solutions that tackle the root causes of pollution burden and cumulative impacts on health disparities.

Sincerely,

  
 Debra Walker, SCRO President



March 23, 2022

Bridgette Murray  
 Director, Achieving Tasks Successfully Together (ACTS)  
 8701 S Gessner Rd.  
 Houston, TX 77074

**RE: Partnership Letter of Support – EPA-OAR-OAQPS-22-01**

Dear Ms. Murray:

The Coalition of Community Organizations (COCO) staff, COCO Board are delighted to support your proposal. *“Defining Baseline Urban Toxics in Houston Through Hyperlocal Citizen Science Community Air Monitoring Networks”* in response to the EPA’s Request for Applications opportunity, EPA-OAS-OAQPS-22-01, Enhanced Air Quality Monitoring for Communities Grant, RFA No. EPA-OAR-OAQPS-22-01.

Since 2008 Coalition of Community Organization served and continues to serve in its capacity to develop a network that builds sustainability within Houston’s most impacted communities by climate justice, environmental justice, and addressing disparities such as food deserts and digital divides through dissemination of information and community events. Some of our synergistic activities include: the Data to Action (D2A) cohort, Hurricane Harvey Re up covery, and other storm damage repair efforts, organizing EJ screen trainings with EPA; assisting in organizing the #JourneytoJustice EPA tour in Houston, the Get Out the Lead Campaigns for Houston Independent School District, Healthy Ports Coalition, Coalition for Environment, Equity, and Resilience, Asthma and Maternal Health studies, attending trainings via Deep South Center for Environmental Justice and Gulf Water Justice Training Institute, and other partners.

COCO’s core values are aligned with this project and match our focus on UN’s Sustainable Development Goals (SDGs). We worked to ensure that health-relevant indicators of household and ambient pollution exposure and disease burden were incorporated in our community engagement document and reflected in our budget. Our engagement will include increased media awareness, hosting community education events, increased engagement of our block captains to disseminate information, up to and including their involvement in the installation of the monitors, hiring a data analyst and website development talent. We plan to leverage communal and internal technical expertise and the actual monitors to track progress on health indicators to measure progress toward achieving progress towards the SDGs 3 and 11.

Targets of particular relevance to ambient and household air pollution and job creation include:

- ◆ SDG target 3.9.1, which calls for a substantial reduction in deaths and illnesses from air pollution.
- ◆ SDG target 11.6.2, which aims to reduce the environmental impact of cities by improving air quality

Coalition of Community Organizations is grateful to be included in this partnership to expand the communal air monitoring network, build on our partnerships with City and County resources to define community exposures to advance improvements in short-term and long-term air quality improvements.

Sincerely,  
 Coalition of Community Organizations

Reverend James L Caldwell, Founder/Director, COCO  
 Phone: 832.231.9176 | Email: [cocohoustonnow@gmail.com](mailto:cocohoustonnow@gmail.com)





**1217 15<sup>Th</sup> St. Galena Park, Texas 77547**

**March 23, 2022**

**Bridgette Murray  
Director, Achieving Community Tasks Successfully (ACTS)  
8701 S. Gessner Rd  
Houston, TX 77074**

**Dear Ms. Murray:**

**We are looking forward to partnering with your organization in applying for the EPA grant opportunity EPA-OAR-OAQPS-22-01 and hopefully getting the grant to implement the air monitoring project entitled “Defining Baseline Urban Air Toxics in Houston Through Hyperlocal Citizen Science Community Air Monitoring Networks” in our respective communities.**

**We have a community air monitor program currently in place in our community that we want to improve and expand. We plan to increase our air monitors in our neighborhood to increase our footprint in our community. We also want to diversify our air monitors to capture other chemicals that affect our air. We want to start an education campaign to educate our community on our air monitor network.**

**I and ECAGP bring the technical skills to benefit our community partnership. I have led community engagement and recently air monitoring efforts at Air Alliance Houston and in the work ECAGP has done for several years. I have personally installed and deployed dozens of air monitors from different manufacturers across Houston, understand the nuances and limitations of different devices and data sharing platforms, and will share technical expertise with all partners with ease.**

***Juan Flores***

**Vice-President  
ECAGP  
713-553-6351**

February 28, 2022

Bridgette Murray  
Director, Achieving Community Tasks Successfully (ACTS)  
8701 S. Gessner Rd  
Houston, TX 77074

Dear Ms. Murray:

Entanglement Technologies, Inc. is pleased to support your proposal, "Defining Baseline Urban Air Toxics in Houston Through Hyperlocal Citizen Science Community Air Monitoring Networks," in response to EPA's Request for Applications opportunity, EPA-OAR-OAQPS-22-01. We are aware of the significant effort that ACTS, and project partners, have made in raising awareness around air quality and believe that this proposal would address critical gaps in our understanding of compounds such as ethylene oxide, 1,3-butadiene, and acrolein.

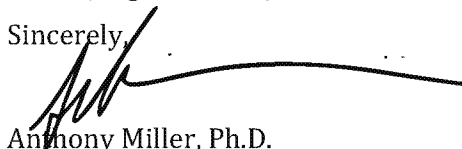
Entanglement Technologies has worked with Harris County Pollution Control, the City of Houston, Environmental Defense Fund, and other project partners for several years, including supporting community efforts to identify potential hotspot areas of air pollution in Houston. Specifically in 2017, Entanglement Technologies worked with the City of Houston to track sources of toxics releases in the immediate aftermath of Hurricane Harvey while other air quality monitoring equipment was offline. In collaboration with Harris County Pollution Control, Entanglement Technologies worked to understand the air quality impact of the 2019 ITC Deer Park fire on surrounding communities. Our expectation is that information collected through the monitoring campaign proposed in the application will assist in identifying and addressing both chronic and acute air pollution issues across Harris County.

Entanglement Technologies has witnessed the dedication and commitment from ACTS as well as other community groups and partners in addressing some of the toughest challenges that are faced in the greater Houston area. Entanglement Technologies is committed to partnering with ACTS and the City of Houston to achieve their objective of increasing their understanding of composition and sources impacting their air quality and the air quality of neighboring communities.

Entanglement Technologies will be available to complete the scope of work as described in this proposal. This includes providing mobile chemical monitoring services using AROMA analyzers during the course of this project. AROMA analyzers can measure ethylene oxide at single digit part-per-trillion concentrations, which is below the 100-in-a-million cancer risk level. Additionally, I will provide my scientific expertise in air quality monitoring and precision measurements to direct the monitoring campaign. I will ensure scientific integrity and quality assurance in data collection and reporting to ACTS.

Entanglement Technologies appreciates the leadership that ACTS has taken to ensure better air quality in the region, and we look forward to working together. Thank you, Ms. Murray, for your efforts in improving the quality of life across one the largest and most diverse cities in the nation.

Sincerely,



Anthony Miller, Ph.D.  
CEO, Entanglement Technologies, Inc.

March 7, 2022

Dear Achieving Community Tasks Successfully representing Houston Data to Action Community Organizations,

I write on behalf of Clarity Movement Co. ("Clarity") in support of Defining Baseline Urban Air Toxics in Houston Through Hyperlocal Citizen Science Community Air Monitoring Networks.

The proposed project builds on the groundbreaking work communities have undertaken to monitor and understand their own air quality over the past several years and would allow for a greater understanding of the air pollution risks communities face. As a result of the incredible advocacy, organizing work the four communities have done, this data would be used, through already established collaboration with policymakers, to inform decision-making in the Houston and Harris County area and push for environmental and climate justice in a city on the frontlines of climate change.

Clarity has extensive experience with air quality monitoring projects and supporting community air monitoring programs throughout the US and internationally and has developed a model that provides not only the hardware required to monitor, but also technical and scientific support to access and understand quality data. Specific to this proposal, Clarity commits to the following:

- Technical support for air quality monitoring program's design and implementation
- Providing 3 discounted Clarity Node-S devices with all Sensing-as-a-Service benefits from August 1, 2022
- Providing training and support for community-based organization staff to deploy and maintain the Clarity devices during the monitoring periods
- Providing technical support to analyze the data collected from the Clarity devices
- Providing technical support to the co-location strategy with TCEQ and/or local authorities

***Commitment of "In-Kind" Matching Funds:***

Furthermore, given our exceptional experiences collaborating with ACTS, SCRO, and Fifth Ward and our immense respect for their work, Clarity is pleased to provide a 20% discount on our solution and associated services.

If you have any questions or concerns regarding this Letter of Support or Clarity's "in-kind" matching commitment, please feel free to contact me directly via email ([katie@clarity.io](mailto:katie@clarity.io)) or by mobile (+1-919-384-5410).

We greatly look forward to a continued partnership that will further expand access to data, understanding of air quality threats, and environmental justice throughout Houston and Harris County.

Thank you,



Katie Moore  
Environmental Project Manager  
Clarity Movement Co.



# CITY OF HOUSTON

Houston Health Department

**Sylvester Turner**

Mayor

Stephen L. Williams, M.Ed., MPA  
Director  
Houston Health Department  
8000 N Stadium Drive  
Houston, Texas 77054-1823

T. 832-393-5169  
F. 832-393-5259  
[www.houstontx.gov](http://www.houstontx.gov)  
[www.houstonhealth.org](http://www.houstonhealth.org)

March 24, 2022

Bridgette Murray  
Director, Achieving Community Tasks Successfully (ACTS)  
Houston, TX

Dear Ms. Murray:

Please accept this letter as our enthusiastic support for your proposal, "Defining Baseline Urban Air Toxics in Houston Through Hyperlocal Citizen Science Community Air Monitoring Networks," in response to EPA's Request for Applications opportunity, EPA-OAR-OAQPS-22-01. We are aware of the significant effort that ACTS and project partners have made in raising awareness around air quality and believe that this proposal would address critical gaps in our understanding of compounds such as ethylene oxide and formaldehyde.

The City of Houston has worked with ACTS and project partners for a number of years, including supporting community efforts to build out the low-cost sensor network in Houston and in identifying potential hotspot areas of air pollution. As this work represents a critical need in the Houston area, the Houston Health Department commits to supporting this proposal by providing additional air monitoring support as described in the proposal. The Health Department commits to participating in regular meetings to support the progress and development of the proposed efforts and assistance in access to monitors managed by the city for the purpose of calibration of any low-cost monitors placed within communities. Our intention is that information collected through this monitoring campaign will assist us in identifying and addressing both chronic and acute air pollution issues across the city.

Having partnered with ACTS and community groups including COCO, Sunnyside, and Galena Park closely over the years, the Health Department has witnessed the dedication and commitment from ACTS and other partners in addressing some of the toughest challenges that we face as an industrial city. We admire the proactive efforts of the many dedicated community members such as yourself who have taken steps to support bringing low-cost sensor networks online.

The City of Houston Health Department appreciates the leadership that ACTS has taken to ensure better air quality in the region, and we look forward to working together. Thank you, Ms. Murray, for your efforts in improving the quality of life across one of the largest and most diverse cities in the nation.

Sincerely,

*Ann* For Loren Hopkins.

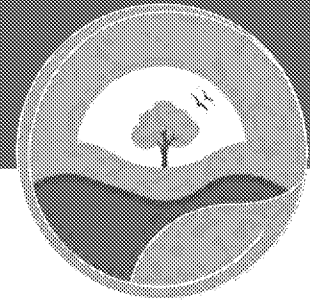
Loren Hopkins, Ph.D.

Chief Environmental Officer, City of Houston

# Harris County<sup>14</sup> Pollution Control

Dr. Latrice Babin, Executive Director

Established in 1953



February 28, 2022

Bridgette Murray  
Director, Achieving Community Tasks Successfully (ACTS)  
8701 S. Gessner Rd  
Houston, TX 77074

Dear Ms. Murray:

Harris County Pollution Control is pleased to support your proposal, "Defining Baseline Urban Air Toxics in Houston Through Hyperlocal Citizen Science Community Air Monitoring Networks," in response to EPA's Request for Applications opportunity, EPA-OAR-OAQPS-22-01. We are aware of the significant effort that ACTS and project partners have made in raising awareness around air quality and believe that this proposal would address critical gaps in our understanding of compounds such as ethylene oxide and formaldehyde.

Harris County Pollution Control has worked with ACTS and project partners for a number of years, including supporting community efforts to build out the low-cost sensor network in Houston and in identifying potential hotspot areas of air pollution. As this work represents a critical need in the Harris County, Pollution Control commits to supporting this proposal by participating in regular meetings to support the progress and development of the proposed efforts and assistance in conducting supporting air monitoring campaigns should findings from the project identify areas of concern with respect to air pollution. Our expectation is that information collected through this monitoring campaign will assist us in identifying and addressing both chronic and acute air pollution issues across the county.

Having partnered with ACTS and community groups including COCO, Sunnyside, and Galena Park closely over the years, Pollution Control has witnessed the dedication and commitment from ACTS and other partners in addressing some of the toughest challenges that we face as an industrial city. We admire the proactive efforts of the many dedicated community members such as yourself who have taken steps to support bringing low-cost sensor networks online.

Harris County Pollution Control appreciates the leadership that ACTS has taken to ensure better air quality in the region, and we look forward to working together. Thank you, Ms. Murray, for your efforts in improving the quality of life across one of the largest and most diverse cities in the nation.

Sincerely,

Dr. Latrice Babin  
Executive Director, Harris County Pollution Control

# LETTERS OF SUPPORT



February 28, 2022

Bridgette Murray  
 Director, Achieving Community Tasks Successfully (ACTS)  
 Houston, TX

Dear Ms. Murray:

We are thrilled to support ACTS' grant application entitled, "Defining Baseline Urban Air Toxics in Houston Through Hyperlocal Citizen Science Community Air Monitoring Networks" in response to EPA's Request for Applications opportunity, EPA-OAR-OAQPS-22-01. We appreciate the tremendous effort that ACTS and project partners have spent in developing this proposal to characterize ambient concentrations of air pollutants such as ethylene oxide and formaldehyde for which there is little to no existing monitoring. The proposed efforts here would fill a critical gap in the existing air quality network and would provide communities within the Houston region more information about potential exposures that may impact their personal health.

Having partnered with ACTS and community groups including COCO, Sunnyside, and Galena Park closely over the years, Environmental Defense Fund (EDF) is confident in the leadership within ACTS and across project partners. We understand the extreme and disparate burden that air pollution has brought to each of these communities and have admired the proactive efforts of the many dedicated community members such as yourself who have taken steps to support bringing low-cost sensor networks online. Indeed, your efforts have been fruitful; recently the Texas state environmental agency placed 2 new regulatory grade monitors within communities as a result of pressure from residents to know more about the quality of air in the region. While not included as a formal partner in the proposal, EDF is fully committed to supporting you and your project partners in fulfilling proposal activities. As this work aligns closely with our own organizational priorities, we are prepared to provide any level of technical support and guidance needed for the duration of the project, including participating in regular meetings with project partners. Dr. Grace Tee Lewis and myself are fortunate to have had the opportunity to witness the success that arises when a committed team pursues a common goal; indeed our efforts together are some of the most rewarding elements of our work; we are proud of all that has been accomplished while we acknowledge the magnitude of work that still needs to be done.

EDF appreciates the leadership that ACTS has taken to ensure better air quality in the region, and we look forward to working together. Thank you, Ms. Murray, for your contribution and dedication to air quality and for improving the lives of so many. We appreciate your lived experience and are grateful for the opportunity to collaborate with you.

Sincerely,

*Elena Craft, Ph.D.*  
*Senior Director, Climate and Air, EDF*





March 18, 2022

Bridgette Murray  
Achieving Community Tasks Successfully (ACTS)  
8701 S. Gessner Rd  
Houston, TX 77074

Dear Ms. Murray:

The Bullard Center for Environmental and Climate Justice at Texas Southern University (TSU) is excited to support ACTS' grant application entitled "Defining Baseline Urban Air Toxics in Houston Through Hyperlocal Citizen Science Community Air Monitoring Networks," in response to EPA's Request for Applications opportunity, EPA-OAR-OAQPS-22-01." We appreciate the tremendous effort that ACTS and project partners have spent in developing this proposal to characterize ambient concentrations of air pollutants such as ethylene oxide and formaldehyde for which there is little to no existing monitoring. The proposed efforts here would fill a critical gap in the existing air quality network and would provide communities within the Houston region more information about potential exposures that may impact their personal health.

Having partnered with ACTS and community groups including COCO (Fifth Ward), SCRO (Sunnyside), and ECAGP (Galena Park) closely over the years, TSU is confident in the leadership within ACTS and across the project partners. We understand the extreme and inequitable burden that air pollution has brought to each of the partnering communities and have admired the proactive efforts of the many dedicated community leaders, such as yourself who have taken steps to support and employ low-cost community air monitoring. Although we are not included as a formal partner in the proposal, the Bullard Center is committed to supporting ACTS and the project partners in fulfilling proposal activities. As this work is at the heart of our work together as part of the HBCU-CBO Gulf Coast Equity Consortium, we will continue to be available to assist with technical support and guidance for the project, including participating in regular meetings with project partners. We have been fortunate to have the opportunity to witness the success that ACTS and its partners have achieved over the years as part of the Consortium and the Data to Action Project with Environmental Defense Fund. We are proud of all that ACTS has been accomplished and we acknowledge the magnitude of environmental justice work that still needs to be done.

The Bullard Center at Texas Southern University is proud of the leadership and the enormous effort that ACTS has taken to ensure better air quality, and we look forward to continuing to work together to enhance the quality of life for residents of environmental justice communities.

Sincerely,

A handwritten signature in cursive script that reads "Robert D. Bullard".

Robert Bullard, PhD  
Director, Bullard Center for Environmental and Climate Justice  
Texas Southern University  
[robert.bullard@tsu.edu](mailto:robert.bullard@tsu.edu)



March 23, 2022

Bridgette Murray  
Achieving Community Tasks Successfully (ACTS)  
8701 S. Gessner Road  
Houston, TX 77074

Dear Ms. Murray,

I am pleased to provide this letter of support for the proposal entitled "Defining Baseline Urban Air Toxics in Houston Through Hyperlocal Citizen Science Community Air Monitoring Networks," in response to EPA's Request for Applications opportunity, EPA-OAR-OAQPS-22-01." As Co-Director of the Historically Black College and University (HBCU)-Community Based Organization (CBO) Gulf Coast Equity Consortium, I have watched Achieving Community Tasks Successfully (ACTS) serve as the Houston CBO for over 5 years. The goal of the Consortium is to improve the health and lives of children and families in the Gulf Coast Region, and ACTS has worked diligently to achieve this goal by implementing community air monitoring, disaster preparedness initiatives, and flood mitigation work, to name a few. Members of ACTS serve on several environmental and climate justice related task force for the City of Houston and Harris County. Bullard Center team members have also worked closely with the other Houston Data to Action groups on various initiatives, and it is exciting to see the four environmental justice groups come together to submit this funding proposal. I believe this is the perfect time to enhance community air monitoring in Pleasantville, Sunnyside, Fifth Ward, and Galena Park because of the ever present, harmful environmental exposures and air quality concerns.

We are grateful for ACTS groundbreaking work on community air monitoring, and we are committed to continuing to provide the technical assistance needed for the proposed grant. I am excited to endorse and give this community air monitoring work my full support, and I am hoping for funding success!

Respectfully,

**Robert Bullard, PhD**  
**Director, Bullard Center for Environmental and Climate Justice at Texas Southern University**  
**Co-Director, HBCU-CBO Gulf Coast Equity Consortium**  
[Robert.bullard@tsu.edu](mailto:Robert.bullard@tsu.edu)



March 23, 2022

**Bridgette Murray**  
 Director, Achieving Community Tasks Successfully (ACTS)  
 8701 S. Gessner Rd  
 Houston, TX 77074

Dear Ms. Murray:

Port Houston is pleased to support ACTS' grant application entitled "Defining Baseline Urban Air Toxics in Houston Through Hyperlocal Citizen Science Community Air Monitoring Networks," in response to EPA's Request for Applications opportunity, EPA-OAR-OAQPS-22-01." We appreciate the tremendous effort that ACTS and project partners have spent in developing this proposal to characterize ambient concentrations of air pollutants such as ethylene oxide and formaldehyde. The proposed efforts would enhance the existing air quality network and would provide communities along the Gulf Coast region more information about potential exposures that may impact their personal health.

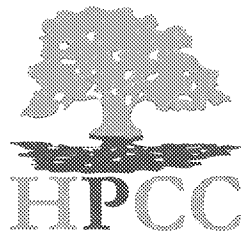
Port Houston is aware of community concerns around air pollution and is supportive of additional monitoring efforts, especially along the Houston Ship Channel. We have witnessed the resolve of committed and engaged neighbors determined to address air pollution issues. We are confident in the leadership within ACTS and across project partners in addressing air pollution and admire the proactive efforts of the many dedicated community members such as yourself. While not included as a formal partner in the proposal, Port Houston is committed to supporting you and your project partners in proposal activities.

Port Houston appreciates the leadership that ACTS has taken to ensure better air quality in the region, and we look forward to working to support you.

Sincerely,

*Trae Camble*  
Trae Camble (Mar 23, 2022 10:48 CDT)

Trae Camble, Director  
 Port Houston



March 7, 2022

Bridgette Murray  
Director, Achieving Community Tasks Successfully (ACTS)  
8701 S. Gessner Rd  
Houston, TX 77074

Dear Ms. Murray:

Healthy Ports Community Coalition (HPCC) is pleased to support ACTS' grant application entitled "Defining Baseline Urban Air Toxics in Houston Through Hyperlocal Citizen Science Community Air Monitoring Networks," in response to EPA's Request for Applications opportunity, EPA-OAR-OAQPS-22-01." We appreciate the tremendous effort that ACTS and project partners have spent in developing this proposal to characterize ambient concentrations of air pollutants such as ethylene oxide and formaldehyde for which there is little to no existing monitoring. The proposed efforts here would fill a critical gap in the existing air quality network and would provide communities along the Gulf Coast region more information about potential exposures that may impact their personal health.

HPCC is composed of many organizations in Houston committed to raising awareness about the harms of air pollution, especially along the Houston Ship Channel. We know first-hand of the challenges and obstacles that these communities face with regard to health impacts from air pollution. We know of the chronic and longstanding disparities that have existed in neighborhoods along the Gulf Coast. And we have witnessed the resolve of committed and engaged neighbors determined to address this environmental racism. We are confident in the leadership within ACTS and across project partners in addressing air pollution and admire the proactive efforts of the many dedicated community members such as yourself. While not included as a formal partner in the proposal, HPCC is committed to supporting you and your project partners in proposal activities. I have been fortunate to have had the opportunity to witness the success that ACTS and its partners have achieved over the years. We are proud of all that has been accomplished while we acknowledge the magnitude of work that still needs to be done.

HPCC appreciates the leadership that ACTS has taken to ensure better air quality in the region, and we look forward to working to support you.

Sincerely,

*Stephanie Thomas*

Stephanie Thomas, Ph.D.  
Project Manager  
Healthy Port Communities Coalition  
[sthomas@citizen.org](mailto:sthomas@citizen.org)



200 East 30th St.  
Austin, TX 78705  
(512) 479-0388

[www.EnvironmentTexas.org](http://www.EnvironmentTexas.org)  
[Info@EnvironmentTexas.org](mailto:Info@EnvironmentTexas.org)  
[/environmenttexas](https://www.facebook.com/environmenttexas)  
[/environmenttex](https://twitter.com/environmenttex)

March 23, 2022

Coalition of Community Organizations (COCO)  
Attn: Reverend James L Caldwell, Founder/Director  
5901 Market St #15310  
Houston, TX 77020

Dear Reverend James L Caldwell:

Environment Texas enthusiastically supports COCO's grant application entitled "Defining Baseline Urban Air Toxics in Houston Through Hyperlocal Citizen Science Community Air Monitoring Networks," in response to EPA's Request for Applications opportunity, EPA-OAR-OAQPS-22-01."

We appreciate the tremendous effort that COCO and project partners have spent in developing this proposal to characterize ambient concentrations of air pollutants such as ethylene oxide and formaldehyde for which there is little to no existing monitoring. The proposed efforts here would fill a critical gap in the existing air quality network and would provide communities along the Gulf Coast region more information about potential exposures that may impact their personal health.

Environment Texas understands the challenges and obstacles that these communities face with regard to health impacts from air pollution. We know of the chronic and longstanding disparities that have existed in neighborhoods along the Gulf Coast. We are confident in the leadership within COCO and across project partners in addressing air pollution and admire the proactive efforts of the many dedicated community members such as yourself.

While not included as a formal partner in the proposal, Environment Texas is committed to supporting you and your project partners in proposal activities. I have been fortunate to have had the opportunity to witness the success that COCO and its partners have achieved over the years. We are proud of all that has been accomplished while we acknowledge the magnitude of work that still needs to be done.

Environment Texas appreciates the leadership that COCO has taken to ensure better air quality in the region, and we look forward to working to support you.

Sincerely,

Luke Metzger  
Executive Director



Coalition of Community Organizations (COCO)  
5901 Market St #15310  
Houston, TX 77020

Dear Reverend James L Caldwell:

West Street Recovery enthusiastically supports COCO's grant application entitled "Defining Baseline Urban Air Toxics in Houston Through Hyperlocal Citizen Science Community Air Monitoring Networks," in response to EPA's Request for Applications opportunity, EPA-OAR-OAQPS-22-01."

We appreciate the tremendous effort that COCO and project partners have spent in developing this proposal to characterize ambient concentrations of air pollutants such as ethylene oxide and formaldehyde for which there is little to no existing monitoring. The proposed efforts here would fill a critical gap in the existing air quality network and would provide communities along the Gulf Coast region more information about potential exposures that may impact their personal health.

We know of the chronic and longstanding disparities that have existed in neighborhoods along the Gulf Coast. And we have witnessed the resolve of committed and engaged neighbors determined to address this environmental racism. While not included as a formal partner in the proposal, West Street Recovery is committed to supporting you and your project partners in proposal activities.

Sincerely, Ben Hirsch  
Co- Director, West Street Recovery

A handwritten signature in black ink, appearing to read 'Ben Hirsch', written over a light gray grid background.

*Greater Fifth Ward  
Super Neighborhood #55*

*"We Must Represent the Power of a Historic  
Community"*



1916 WORMS ST.  
HOUSTON, TX 77020

Preferred Email:  
[survivor770205@yahoo.com](mailto:survivor770205@yahoo.com)  
Email: [Fifth\\_wd\\_sn55@gmail.com](mailto:Fifth_wd_sn55@gmail.com)

March 22, 2022

Coalition of Community Organizations (COCO)  
Attn: Reverend James L Caldwell, Founder/Director  
5901 Market St #15310  
Houston, TX 77020

Dear Reverend James L Caldwell:

The Greater Fifth Ward Super Neighborhood #55 enthusiastically supports COCO's grant application entitled "Defining Baseline Urban Air Toxics in Houston Through Hyperlocal Citizen Science Community Air Monitoring Networks," in response to EPA's Request for Applications opportunity, EPA-OAR-OAQPS-22-01." We appreciate the tremendous effort that COCO and project partners have spent in developing this proposal to characterize ambient concentrations of air pollutants such as ethylene oxide and formaldehyde for which there is little to no existing monitoring. The proposed efforts here would fill a critical gap in the existing air quality network and would provide communities along the Gulf Coast region more information about potential exposures that may impact their personal health.

The Greater Fifth Ward Super Neighborhood #55 knows first-hand the challenges and obstacles that these communities face with regard to health impacts from air pollution. We know of the chronic and longstanding disparities that have existed in neighborhoods along the Gulf Coast. And we have witnessed the resolve of committed and engaged neighbors determined to address this environmental racism. We are confident in the leadership within COCO and across project partners in addressing air pollution and admire the proactive efforts of the many dedicated community members such as yourself. While not included as a formal partner in the proposal, The Greater Fifth Ward Super Neighborhood #55 is committed to supporting you and your project partners in proposal activities. I have been fortunate to have had the opportunity to witness the success that COCO and its partners have achieved over the years. We are proud of all that has been accomplished while we acknowledge the magnitude of work that still needs to be done.

The Greater Fifth Ward Super Neighborhood #55 appreciates the leadership that COCO has taken to ensure better air quality in the region, and we look forward to working to support you.

Sincerely,

Joetta Stevenson, President  
Greater Fifth Ward Super Neighborhood #55



20 N. Sampson St.  
Houston, TX 77003  
TexasHousers.org

March 22, 2022

Coalition of Community Organizations (COCO)  
Attn: Reverend James L Caldwell, Founder/Director  
5901 Market St #15310  
Houston, TX 77020

Dear Reverend James L Caldwell,

Thank you for all the work COCO does in our community to continue supporting low-income and marginalized communities as they fight for justice for their homes, their environment, and their neighborhoods. Texas Housers supports COCO's grant application entitled "Defining Baseline Urban Air Toxics in Houston Through Hyperlocal Citizen Science Community Air Monitoring Networks," in response to EPA's Request for Applications opportunity, EPA-OAR-OAQPS-22-01."

We are aware of the dangerous living conditions that people of color have continuously faced throughout our history. The health impacts endured by these communities from air pollution are further exacerbated by the natural disaster that pummel our region at an exponential rate. We are also aware that data reporting system are not always active during emergency situations and believe it is imperative for the community to have access to any and all information necessary to make informed decisions.

We appreciate the tremendous effort that COCO and project partners have spent in developing this proposal to characterize ambient concentrations of air pollutants such as ethylene oxide and formaldehyde for which there is little to no existing monitoring. The proposed efforts here would fill a critical gap in the existing air quality network and would provide communities along the Gulf Coast region more information about potential exposures that may impact their personal health.

While not included as a formal partner in the proposal, Texas Housers is committed to supporting you and your project partners in proposal activities to address environmental racism. We are confident in the leadership within COCO and across project partners in addressing air pollution and admire the proactive efforts of the many dedicated community members such as yourself.

Sincerely,

Julia Orduña

*Texas Housers is a 501(c)(3) nonprofit organization founded in 1988 to work for housing justice and fair and equal treatment by government of communities. Our mission is to support low-income Texans' efforts to achieve the American dream of a decent, affordable home in a quality neighborhood of their choosing. We work toward these goals through research, policy, and collaboration with community organizations.*



February 28, 2022

Bridgette Murray  
Director, Achieving Community Tasks Successfully (ACTS)  
8701 S. Gessner Rd  
Houston, TX 77074

Dear Ms. Murray:

The Greater Houston Local Emergency Planning Committee (GHLEPC) is pleased to support your proposal, *"Defining Baseline Urban Air Toxics in Houston Through Hyperlocal Citizen Science Community Air Monitoring Networks,"* in response to EPA's Request for Applications opportunity, EPA-OAR-OAQPS-22-01. We are aware of the significant efforts that ACTS and project partners have made over the years in raising awareness around air quality and believe that this proposal would address critical gaps in our understanding of compounds such as ethylene oxide and formaldehyde.

As you know, LEPCs represent the first responders in an air quality emergency. Often our efforts would benefit from having additional information regarding the quality of air in the region, particularly during an emission event. Data collected through your efforts will assist in providing us with additional knowledge about baseline concentrations of a variety of air pollutants and will add to the extensive local efforts to understand air pollution that are already in place.

The nature of LEPCs is to work closely and collaboratively with communities for the protection of all residents in the face of air quality emergencies. We are aware and are supportive of the efforts over the last several years, by ACTS and project partners, to build out the low-cost sensor network in Houston and to identify potential hotspot areas of air pollution. As this work represents a critical need in the Harris County, our LEPC commits to supporting your efforts should findings from the project identify areas of concern with respect to air pollution. Our expectation is that information collected through this monitoring campaign will assist us in identifying and addressing both chronic and acute air pollution issues across the county.

Our LEPC is well aware of ACTS dedication and commitment and its work with other partners in addressing some of the toughest challenges that we face as an industrial city. We admire the proactive efforts of the many dedicated community members such as yourself who have taken steps to support bringing low-cost sensor networks online.

Sincerely,



Dr. Denise Chatam Walker  
Chair



900 Bagby St. ♦ First Floor ♦ Houston, TX 77006

March 11, 2022

Bridgette Murray  
Director, Achieving Community Tasks Successfully (ACTS)  
8701 S. Gessner Rd  
Houston, TX 77074

Dear Ms. Murray:

As Houston City Council Member representing District B, I am pleased to support your proposal, "Defining Baseline Urban Air Toxics in Houston Through Hyperlocal Citizen Science Community Air Monitoring Networks," in response to EPA's Request for Applications opportunity, EPA-OAR-OAQPS-22-01. We are aware of the significant efforts that ACTS and project partners have made in raising awareness around air quality and believe that this proposal would address critical gaps in our understanding of compounds such as ethylene oxide and formaldehyde.

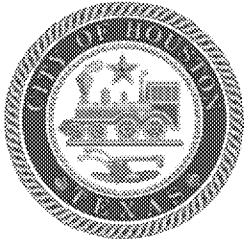
Houston is home to a large number of industrial facilities, including those in District B. As a council member, I am supportive of increased efforts to monitor and address air pollution across the city. Data collected through your efforts will assist in providing additional knowledge about baseline concentrations of a variety of air pollutants and will add to the extensive local efforts to understand air pollution that are already in place. Our expectation is that information collected through this monitoring campaign will assist us in identifying and addressing both chronic and acute air pollution issues across the city.

Representing ACTS and other community groups, I am well aware of the dedication and commitment from ACTS and other partners in addressing some of the toughest challenges that we face as an industrial city. I admire the proactive efforts of the many dedicated community members such as yourself who have taken steps to support bringing low-cost sensor networks online.

The city of Houston appreciates the leadership that ACTS has taken to ensure better air quality in the region, and we look forward to working together. Thank you for your efforts in improving the quality of life across one of the largest and most diverse cities in the nation.

Sincerely,

Tarsha Jackson  
Houston City Council District B



# Abbie Kamin

---

Houston City Council Member, District C  
Chair, Public Safety & Homeland Security Committee

Bridgette Murray Director, Achieving Community Tasks Successfully (ACTS) 8701 S. Gessner Rd  
Houston, TX 77074

Dear Ms. Murray:

As the Houston City Council Member representing District C, I am pleased to support the proposal, "Defining Baseline Urban Air Toxics in Houston Through Hyperlocal Citizen Science Community Air Monitoring Networks," in response to EPA's Request for Applications opportunity, EPA-OAR-OAQPS-22-01. We are aware of the significant efforts that ACTS and project partners have made in raising awareness around air quality and believe that this proposal would address critical gaps in our understanding of compounds such as ethylene oxide and formaldehyde.

Houston is home to a large number of industrial facilities. As a council member, I am supportive of increased efforts to monitor and address air pollution across the city. Data collected through your efforts will assist in providing additional knowledge about baseline concentrations of a variety of air pollutants and will add to the extensive local efforts to understand air pollution that are already in place. Our expectation is that information collected through this monitoring campaign will assist us in identifying and addressing both chronic and acute air pollution issues across the city.

Representing ACTS and other community groups, I am well aware of the dedication and commitment from ACTS and other partners in addressing some of the toughest challenges that we face as an industrial city. I admire the proactive efforts of the many dedicated community members such as yourself who have taken steps to support bringing low-cost sensor networks online.

The City of Houston appreciates the leadership that ACTS has taken to ensure better air quality in the region, and we look forward to working together. Thank you for your efforts in improving the quality of life across one of the largest and most diverse cities in the nation.

Sincerely,

*Abbie Kamin*

Abbie Kamin Houston City Council Member, District C

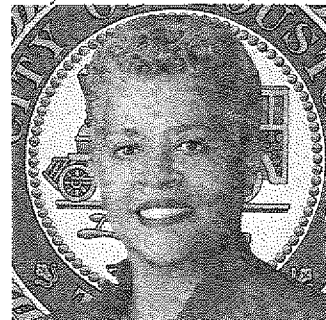
City Hall Annex  
900 Bagby St., 1<sup>st</sup> Floor, Houston, TX 77002

Phone: 832.393.3004  
Email: [districtc@houstontx.gov](mailto:districtc@houstontx.gov)



## Dr. Carolyn Evans-Shabazz

Houston City Council Member, District D



February 28, 2022

Bridgette Murray  
Director, Achieving Community Tasks Successfully (ACTS)  
8701 S. Gessner Rd  
Houston, TX 77074

Dear Ms. Murray:

As Houston City Council Member District D, I am pleased to support your proposal, "Defining Baseline Urban Air Toxics in Houston Through Hyperlocal Citizen Science Community Air Monitoring Networks," in response to EPA's Request for Applications opportunity, EPA-OAR-OAQPS-22-01. We are aware of the significant efforts that ACTS and project partners have made in raising awareness around air quality and believe that this proposal would address critical gaps in our understanding of compounds such as ethylene oxide and formaldehyde.

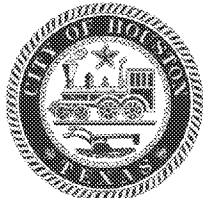
Houston is home to a large number of industrial facilities, including those in District D. As a council member, I am supportive of increased efforts to monitor and address air pollution across the city. Data collected through your efforts will assist in providing additional knowledge about baseline concentrations of a variety of air pollutants and will add to the extensive local efforts to understand air pollution that are already in place. Our expectation is that information collected through this monitoring campaign will assist us in identifying and addressing both chronic and acute air pollution issues across the city.

Representing ACTS and other community groups, I am well aware of the dedication and commitment from ACTS and other partners in addressing some of the toughest challenges that we face as an industrial city. I admire the proactive efforts of the many dedicated community members such as yourself who have taken steps to support bringing low-cost sensor networks online.

The city of Houston appreciates the leadership that ACTS has taken to ensure better air quality in the region, and we look forward to working together. Thank you for your efforts in improving the quality of life across one of the largest and most diverse cities in the nation.

Respectfully,

Dr. Carolyn Evans-Shabazz  
Houston City Council Member  
District D



## COUNCIL MEMBER LETITIA PLUMMER DDS

Houston City Council At-Large Position 4

March 24<sup>th</sup>, 2022

Dear Reverend James L Caldwell,

I am writing in support of your grant application entitled "Defining Baseline Urban Air Toxics in Houston Through Hyperlocal Citizen Science Community Air Monitoring Networks," in response to EPA's Request for Applications opportunity, EPA-OAR-OAQPS-22-01.

I appreciate the tremendous effort that the Coalition of Community Organizations (COCO) and project partners have spent in developing this proposal to characterize ambient concentrations of air pollutants such as ethylene oxide and formaldehyde for which there is little to no existing monitoring. The proposed efforts here would fill a critical gap in the existing air quality network and would provide communities along the Gulf Coast region more information about potential exposures that may impact their personal health.

I am aware of chronic and longstanding disparities that have existed in neighborhoods along the Gulf Coast and have witnessed the resolve of committed and engaged neighbors determined to address this environmental racism. As your City of Houston Council Member, I am proud of your effort and grateful for your work. I unequivocally support your project.

I look forward to working with you and the Coalition of Community Organizations to further improve conditions for the people in the area.

Sincerely,

A handwritten signature in black ink, appearing to read "L. Plummer".

Council Member Letitia Plummer, DDS  
At-Large 4



CENTER FOR

ASTROPHYSICS

HARVARD &amp; SMITHSONIAN

March 9, 2022

Bridgette Murray  
 Director, Achieving Community Tasks Successfully (ACTS)  
 8701 S. Gessner Rd  
 Houston, TX 77074

Dear Ms. Murray,

Please accept this letter in support of your EPA proposal (EPA-OAR-OAQPS-22-01), "Defining Baseline Urban Air Toxics in Houston Through Hyperlocal Citizen Science Community Air Monitoring Networks." The activities outlined in this proposal are aligned directly with efforts supported by the Center for Astrophysics | Harvard & Smithsonian and we believe that the data collected as part of these campaigns will inform the larger scientific community about air pollution in the region.

Specifically, our institution and its funding agencies would benefit from your efforts by using the data collected from the ground monitoring campaigns for comparison with our own satellite-based measurements of formaldehyde. We can offer support in providing some technical guidance and consultation in the development of your drive plans (for example, we can provide support to use and interpret formaldehyde data from current and future satellite instruments) as well as participate in project discussions.

Having been involved in previous satellite and airborne studies of nitrogen dioxide and formaldehyde in Houston, we are aware of the air quality challenges that exist in Houston and the disparities in pollution that exist across communities. The proposed efforts here would fill a critical gap in the existing air quality network and would provide communities within the Houston region more information about potential exposures that may impact their personal health.

We admire the proactive efforts of the many dedicated community members such as yourself who have taken steps to support bringing low-cost sensor networks online and we look forward to collaborating with you in this important work.

Sincerely,  
 Gonzalo González Abad



Digitally signed by Gonzalo  
 Gonzalez Abad  
 Reason: I am the author of this  
 document  
 Location: Smithsonian Astrophysical  
 Observatory  
 Date: 2022-03-09 17:06:24

Email [ggonzalezabad@cfa.harvard.edu](mailto:ggonzalezabad@cfa.harvard.edu)  
 Phone 617.496.7938

Center for Astrophysics | Harvard & Smithsonian  
 60 Garden St., MS 50  
 Cambridge, MA 02138



Fatherhood Mentoring Foundation  
501(c)(3) Non-Profit Org.

600 West Loop South, Suite 115  
 Houston, Texas 77002  
 501-246-0888  
 FatherhoodMentoringFoundation.org  
[www.fatherhoodmentoringfoundation.org](http://www.fatherhoodmentoringfoundation.org)

Givelify

March 22, 2022

Coalition of Community Organizations (COCO)  
 Attn: Reverend James L Caldwell, Founder/Director  
 5901 Market St #15310  
 Houston, TX 77020

Dear Reverend James L Caldwell:

Fatherhood Mentoring Foundation enthusiastically supports COCO's grant application entitled "Defining Baseline Urban Air Toxics in Houston Through Hyperlocal Citizen Science Community Air Monitoring Networks," in response to EPA's Request for Applications opportunity, EPA-OAR-OAQPS-22-01."

We appreciate the tremendous effort that COCO and project partners have spent in developing this proposal to characterize ambient concentrations of air pollutants such as ethylene oxide and formaldehyde for which there is little to no existing monitoring. The proposed efforts here would fill a critical gap in the existing air quality network and would provide communities along the Gulf Coast region more information about potential exposures that may impact their personal health.

Fatherhood Mentoring Foundation knows first-hand the challenges and obstacles that these communities face with regard to health impacts from air pollution. We know of the chronic and longstanding disparities that have existed in neighborhoods along the Gulf Coast. And we have witnessed the resolve of committed and engaged neighbors determined to address this environmental racism. We are confident in the leadership within COCO and across project partners in addressing air pollution and admire the proactive efforts of the many dedicated community members such as yourself.

While not included as a formal partner in the proposal, Fatherhood Mentoring Foundation is committed to supporting you and your project partners in proposal activities. I have been fortunate to have had the opportunity to witness the success that COCO and its partners have achieved over the years. We are proud of all that has been accomplished while we acknowledge the magnitude of work that still needs to be done.



Fatherhood Mentoring Foundation appreciates the leadership that COCO has taken to ensure better air quality in the region, and we look forward to working to support you.

Sincerely,

A handwritten signature in cursive script, reading "Rev. Wade Edwards, Sr.", written in dark ink.

Rev. Wade Edwards, Sr.  
Founder / Executive Director  
Fatherhood Mentoring Foundation

February 28, 2022

Bridgette Murray  
Director, Achieving Community Tasks Successfully (ACTS)  
8701 S. Gessner Rd  
Houston, TX 77074

Dear Ms. Murray:

One Breath Partnership enthusiastically supports ACTS' grant application entitled "Defining Baseline Urban Air Toxics in Houston Through Hyperlocal Citizen Science Community Air Monitoring Networks," in response to EPA's Request for Applications opportunity, EPA-OAR-OAQPS-22-01." We appreciate the tremendous effort that ACTS and project partners have spent in developing this proposal to characterize ambient concentrations of air pollutants such as ethylene oxide and formaldehyde for which there is little to no existing monitoring. The proposed efforts here would fill a critical gap in the existing air quality network and would provide communities along the Gulf Coast region more information about potential exposures that may impact their personal health.

One Breath Partnership is comprised of six organizations in Houston committed to raising awareness about the harms of air pollution. We know first-hand of the challenges and obstacles that these communities face with regard to health impacts from air pollution. We know of the chronic and longstanding disparities that have existed in neighborhoods along the Gulf Coast. And we have witnessed the resolve of committed and engaged neighbors determined to address this environmental racism. We are confident in the leadership within ACTS and across project partners in addressing air pollution and admire the proactive efforts of the many dedicated community members such as yourself. While not included as a formal partner in the proposal, One Breath Partnership is committed to supporting you and your project partners in proposal activities. I have been fortunate to have had the opportunity to witness the success that ACTS and its partners have achieved over the years. We are proud of all that has been accomplished while we acknowledge the magnitude of work that still needs to be done.

One Breath Partnership appreciates the leadership that ACTS has taken to ensure better air quality in the region, and we look forward to working to support you.

Sincerely,

A handwritten signature in cursive script, appearing to read "Grace Tee Lewis".

Grace Tee Lewis  
One Breath Partnership



**DEEPSOUTH  
CENTER FOR**  
ENVIRONMENTAL JUSTICE

9801 Lake Forest, Blvd  
New Orleans, LA 70127  
(504) 272-0956  
[www.dscej.org](http://www.dscej.org)

February 28, 2022

Bridgette Murray  
Director, Achieving Community Tasks Successfully (ACTS)  
8701 S. Gessner Rd  
Houston, TX 77074

Dear Ms. Murray:

The Deep South Center for Environmental Justice (DSCEJ) enthusiastically supports ACTS' grant application entitled "Defining Baseline Urban Air Toxics in Houston Through Hyperlocal Citizen Science Community Air Monitoring Networks," in response to EPA's Request for Applications opportunity, EPA-OAR-OAQPS-22-01." We appreciate the tremendous effort that ACTS and project partners have spent in developing this proposal to characterize ambient concentrations of air pollutants such as ethylene oxide and formaldehyde for which there is little to no existing monitoring. The proposed efforts here would fill a critical gap in the existing air quality network and would provide communities along the Gulf Coast region more information about potential exposures that may impact their personal health.

DSCEJ knows first-hand the challenges and obstacles that these communities face with regard to pollution. We have experienced the chronic and longstanding disparities that have existed in neighborhoods like ours. And we have witnessed the resolve of committed and engaged neighbors determined to address this environmental racism. We are confident in the leadership within ACTS and across project partners in addressing air pollution and admire the proactive efforts of the many dedicated community members such as yourself. While not included as a formal partner in the proposal, DSCEJ is committed to supporting you and your project partners in proposal activities. I have been fortunate to have had the opportunity to witness the success that ACTS and its partners have achieved over the years. We are proud of all that has been accomplished while we acknowledge the magnitude of work that still needs to be done.

DSCEJ appreciates the leadership that ACTS has taken to ensure better air quality in the region, and we look forward to working to support you.

Sincerely,

Beverly Wright, Ph.D.  
Executive Director



# **PUBLIC HEALTH**

TEXAS A&M HEALTH SCIENCE CENTER

March 24, 2022

Bridgette Murray  
Director, Achieving Community Tasks Successfully (ACTS)  
8701 S. Gessner Rd  
Houston, TX 77074

Dear Ms. Murray:

Texas A&M enthusiastically supports ACTS' grant application entitled "Defining Baseline Urban Air Toxics in Houston Through Hyperlocal Citizen Science Community Air Monitoring Networks," in response to EPA's Request for Applications opportunity, EPA-OAR-OAQPS-22-01." We appreciate the effort that ACTS and project partners have spent in developing this proposal to characterize ambient concentrations of air pollutants such as ethylene oxide and formaldehyde for which there is little to no existing monitoring. The proposed efforts here would fill a critical gap in the existing air quality network and would provide communities within the Houston region more information about potential exposures that may impact their personal health.

Having partnered with ACTS and community groups including COCO closely over the years, Texas A&M is confident in the leadership within ACTS and across project partners. Having worked closely with communities and conducted air, water, and soil sampling, we understand the extreme and disparate burden that pollution has brought to these communities and have admired the proactive efforts of the many dedicated community members such as yourself. While not included as a formal partner in the proposal, Texas A&M is committed to supporting you and your project partners. We stand prepared to assist with technical advice and support when necessary. I have been fortunate to have had the opportunity to witness the success that ACTS and its partners have achieved over the years. We are proud of all that has been accomplished while we acknowledge the magnitude of work that still needs to be done.

Texas A&M appreciates the leadership that ACTS has taken to ensure better air quality in the region, and we look forward to working together.

Sincerely,

A handwritten signature in black ink, appearing to read 'Garrett Sansom'.

Garett Sansom, DrPH, MPH  
Research Assistant Professor, Environmental & Occupational Health  
Health & Environment Lead, Institute for Sustainable Communities  
Community Engagement Core, Superfund Research Center

# RESUMES OF PROJECT MANAGER AND OTHER KEY PERSONNEL

**Mission:**

To provide information, resources and training that result in communities achieving their goals and objectives for sustainability

**Vision:**

Transforming communities to empower residents

---

**Bridgette L. Murray**

**Founder/Executive Director Achieving Community Tasks Successfully dba ACTS**

**PROFESSIONAL SUMMARY**

- Executive team leadership
- Community Organizer/Activist
- Process Improvement
- Staff training policy development
- Founder/Executive Director nonprofit organization

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**EDUCATION & OTHER PROFESSIONAL QUALIFICATIONS**

Graduate, Texas Organizing Project Board & Commissions Leadership Training	2019
Senior Fellow, American Leadership Forum, Community Development Class 1	2014
MBA (Operations Management) University of Houston	1994
BS (Nursing major), Baylor University	1976

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**EMPLOYMENT, APPOINTMENTS & EXPERIENCE (SELECTED & RELEVANT)**

- Member, Port Commission Citizens Advisory Council Port Houston 2013-present
- Member, Houston Community College, Bond Oversight Committee 2013-2019
- Founder/Executive Director Achieving Community Tasks Successfully dba ACTS 2013-Present

Executive work experience in the health care field

- 2003-2016 Associate Director of Patient Access Administration, M. D. Anderson Cancer Center
- 2000-2003 Director, Health Services /Medical Management, Gulf Quest LLC
- Additional information provided upon request

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**COMMUNITY ACTIVITIES**

- President, Pleasantville Area Super Neighborhood Council #57
- Former President, Pleasantville Civic League
- President, Judson Robinson Sr. Friends of the Park

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Contact Information:

P. O. Box 24687

Houston, TX 77229

Office: 281-658-5392

ACTS website:

<http://acts-organization.org/>

Social Media

Twitter – ACTS\_CBO

Facebook

[www.facebook.com/pleasantvilleorg](http://www.facebook.com/pleasantvilleorg)

**Mission:**

To provide information, resources and training that result in communities achieving their goals and objectives for sustainability

**Vision:**

Transforming communities to empower residents

---

**Tracy Stephens**

**Board Director**

**Research Coordinator, Achieving Community Tasks Successfully dba ACTS**

**PROFESSIONAL SUMMARY**

- Executive team leadership
- Community Organizer/Activist
- Flood & stormwater drainage expert consultant for the Texas Gulf Coast

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**EDUCATION & OTHER PROFESSIONAL QUALIFICATIONS**

Evan E. Worthing Senior High School Graduate, HISD

1976

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**EMPLOYMENT, APPOINTMENTS & EXPERIENCE (SELECTED & RELEVANT)**

- Field Supervisor of Streets & Drainage City of Houston, Department of Public Works and Engineering 1977-2003

Appointments/Consulting:

- Community Flood Resilience Task Force for Harris County / 2021 to present
- CDBG -MIT Advisory Committee for Texas General Land Office / 2021 to present
- Texas Department of Transportation (TxDOT) Consultant / 2009-Present
- Harris County Flood Control Drainage Consultant 2011- Present
- Vice Chair, Gulfgate Tax Increment Reinvestment Zone (TIRZ)#8

Additional information provided upon request

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**COMMUNITY ACTIVITIES**

- President, Sunnyside Community Civic Club
- 

Contact Information:

P. O. Box 24687

Houston, TX 77229

Office: 281-658-5392

ACTS website:

<http://acts-organization.org/>

Social Media

Twitter – ACTS\_CBO

Facebook

[www.facebook.com/pleasantvilleorg](http://www.facebook.com/pleasantvilleorg)

*Rev. James L. Caldwell*

## RESUME and BIO

Reverend James L Caldwell is a native Houstonian. He is a graduate of Phyllis Wheatley High School and Texas Southern University's School of Public Affairs. Reverend James L Caldwell also attended Dallas Theological Seminary and has been an ordained minister for 28 years. Reverend Caldwell is a community advocate and his advocacy and activism span 20 years.

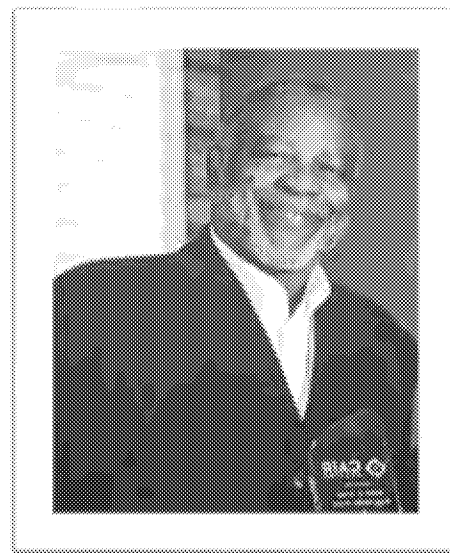
He is the founder and director of the Coalition of Community Organizations, which connects communities to the invaluable resources they need and connects organizations with one another.

He also served as the Interim President of the NorthEast Concerned Civic Citizens League (NECCCL) until July 2021 in the wake of the untimely passing of its Board of Directors.

He also serves as a Board Member of MIEHR Research Center Community Advisory Board. The newly funded center is focused on the environmental aspects of maternal and infant health with Texas Southern University.

Reverend Caldwell also serves on the Membership Team for CEER, Coalition of Environment, Equity, & Resilience (CEER). Reverend Caldwell is also a Harris County Registered Deputy Voter Registrar.

Reverend Caldwell has received multiple awards and certificates recognizing his work in Environmental Equity and Justice from leaders at all levels – community, city, county, state, and Federal.



### Organizations

Reverend Caldwell is also actively involved in:

- WE ACT for Environmental Justice | WE ACT por la Justicia Ambiental
- Deep South Center for Environmental Justice
- Clean Gulf Commerce Coalition
- PCORI Baylor College of Medicine's Asthma Study Advisory Committee
- Port of Houston Authority Chairman's Community Advisory Committee
- Healthy Port Community Coalition
- Clean Gulf Commerce Coalition
- PCORI Baylor College of Medicine's Asthma Study Advisory Committee
- Texas Organizing Project
- People Before Profits
- Fifth Ward Revitalization Board
- Environmental Justice Forum
- Data 2 Action with TSU and EDF
- Fair Housing and Neighborhood Rights and Kashmere Gardens Complete Communities
- MAPPS – Metal Air Pollutions Partnership Solutions Project
- Climate Reality Leadership Corp Training Cohort Attendee



## **Environmental Protection Agency**

EPA Administrator Michael Reagan

1200 Pennsylvania Avenue, N.W.  
Washington, DC 20460

Re: Debra Walker's Bio

Debra Walker is the Founder and President of Sunnyside Community Redevelopment Organization, a community-based, 501© 3 non-profit organization dedicated to seeking to educate, advocate and empower community residents. To ensure that our mission is fulfilled through strategic planning and empowering the community about their environment and air pollution. What is air pollution and engaging community residents and organizations on the implementation of fence-lined communities and low-income neighborhoods in marginalized communities. SCRO believes everyone has a right to breathe clean air, clean air should be a fundamental human right. Where you live, work, learn, and play should not determine your health.

Debra is a long time resident of East Sunnyside committed to reviving and not displacement of her Sunnyside neighborhood. Her passion as a Community Leader stems from serving as President of TOP EDFund Board Organization:

- Member of A.P.R.I. Organization
- Serve as President of East Sunnyside Civic Club President
- Serve as BCLI Inaugural Cohort
- Serve as Advocate Negotiator for HCDD/HUD for Disaster Recovery Funding along with City of Houston
- Created a Comprehensive Community Plan for Sunnyside
- Making an Impact with Environmental and Housing Program
- Created and deployed Air Monitoring Network System community operated and community owned for Sunnyside Community

Among my desires to use the roadmap to find my purpose of ideas is to fight to improve the quality of life and create a healthy sustainable community in Sunnyside.

## **Juan L. Flores Jr.**

1508 Eastway St.  
Galena Park, TX 77547  
Bilingual Spanish

713-553-6351  
[juan.flores62@gmail.com](mailto:juan.flores62@gmail.com)

### **Education**

1999–2003                      University of Houston                      Houston, TX

- B.S., Human Development and Family Studies.
- American Humanics Certification Program in Youth and Human Service Nonprofit Management and Leadership.

### **Work Experience**

#### **Air Alliance Houston, Houston, TX**

**2015-current**

Air Monitoring Program Manager 2019-current

Community Outreach Coordinator 2015-2019

- Created, organized, and implementing a new program called the Community Air Monitoring Program.
- Created, recruited, and implementing Air Ambassador Program and panel.
- Supervise air ambassadors.
- Create and implement the community air monitoring program for the communities of Pasadena, Galena Park, Jacinto City, Kashmere Gardens, Near Northside and Gulfton.
- Purchased, set location and install air monitors throughout the participating communities.
- Recruit community participants to allow us to install air monitors.
- Give interviews concerning air quality and community issues through local tv, radio, documentaries, films, and other media sources.
- Prepared, sent in reports and statistics to foundations such as Aetna and Rockefeller.
- Organized toxic tours and presentations to prospective foundation source members.
- Organized and implemented social media campaigns for programs and community initiatives.
- Oversee and manage Metal Air Pollution Partnership Solutions study in conjunction with the University of Texas Health School of Public Health.
- Represent Air Alliance at the Community Advisory Board.
- Organize and hold residential community advisory board.
- For the MAPPS project I worked in the neighborhoods of Magnolia Park, South Park, East Lawndale, and 5<sup>th</sup> Ward.
- Canvassing neighborhoods for the Metal Air Pollution Partnership study.
- Helped organize Earth Day Festival.
- Lobbied and succeeded in getting local cities to pass clear air legislation.
- Lobbied and testified at the Texas State Capital concerning environmental issues.

#### **City of Galena Park, Galena Park, TX**

**2014-2016**

Commissioner Positon 4

- Elected by the citizens of Galena Park to a two-year term.
- Serve in positions 4 which oversees the department of streets and bridges.

#### **Greater East End Management District, Houston, TX**

**2013-2015**

Community Liaison

- Represented, and informed the community on GEEMD events, and initiatives at civic club meetings, community meetings, community projects, and television interviews.
- Create a Hispanic Business, Retention, and Expansion program.
- Helped in special events such as street festivals, ground breaking, and opening events, and special community events.

#### **SER Jobs For Progress, Houston, TX**

**2013-2015**

Community Coordinator/HYPE Community Liaison

- Responsible for directing the East End Collaborative initiative for SER Jobs for Progress.
- Recruited residents to join the Go Neighborhoods project, volunteer as team members and captains, lead residents in creating

projects, trained resident and put together monthly community meetings.

**Spring Branch Community Health Center, Houston, TX**

**2013**

Community Engagement Specialist

- Engaged and marketed to local residents, schools, churches, apartments, and business about the services offered by the organization.

**Big Brothers Big Sisters Lone Star, Houston, TX**

**2010-2012**

Hispanic Partnership Coordinator

- Started new partnerships with businesses, religious institutions, public and private schools, law organizations, city and county entities, and social organizations throughout, the Houston area, Baytown area, Waller area, and Montgomery County areas.
- In charge of starting Hispanic partnerships, recruiting Hispanic volunteers, giving Spanish television and radio interviews, and starting Hispanic advisory boards to help reach this market on behalf of Big Brothers Big Sisters.

**Boy Scouts of America, Sam Houston Area Council, Houston, TX**

**2002-2010**

Senior District Executive 2008-2010

Associate District Executive 2006-2008

Urban District Executive 2004-2006

Paraprofessional 2002-2004

## **Volunteer Activities/Leadership Positions:**

**Environmental Community Advocates of Galena Park**

- Vice President

**Galena Park/Jacinto City Rotary - President 2020-2021**

**Port Commission Community Advisory Council**

**Galena Park Volunteer Fire Department**

**North Pasadena Community Outreach Board Member**

**League of United Latin America Citizens**

- Member for 21 years; Former president of council 4703 Eastside council and Conroe chapter; Served as Vice president of youth over three youth councils at local high schools and helped establish a new youth chapter; and Served as civil right, scholarship and fundraiser chairs.

**Knights of Columbus**

- Member for 21 years; Member in the highest order 4<sup>th</sup> degree; Appointed as district deputy to oversee 4 councils including communities such as Huntsville, New Waverly, Anderson, and Willis; Served as captain, pilot, webmaster, and commander; Navigator for the 4<sup>th</sup> degree assembly.

**Galena Park ISD Early Head Start**

- Former member of advisory board.

**Boy Scouts of America**

- Volunteer for Pack 1141 and Troop 17 Port Houston Elementary serving the positions of cubmaster, committee Chair, and a unit commissioner.

**SER-Corp**

- Former Board Member.

**Galena Park Resource and Training Center**

- Board Member

**References available upon request.**

BIOGRAPHICAL SKETCH		
NAME Anthony E. Miller, Ph.D.	POSITION TITLE Chief Executive Officer, Entanglement Technologies	
EDUCATION/TRAINING		
INSTITUTION AND LOCATION	DEGREE	FIELD OF STUDY
Princeton University	A.B.	Physics
California Institute of Technology	N/A	Physics
Stanford University	Ph.D.	Applied Physics

As CEO, Dr. Anthony Miller leads long term company strategy, partnerships, and retains an active role in the day-to-day scientific operation of the company. Dr. Miller is a founding member of Entanglement Technologies and a Hertz Fellow. He received a Ph.D. in Applied Physics from Stanford University with a specialization in quantum enhanced sensing and metrology.

Dr. Miller is an expert in precision laser techniques, precision measurement, signal processing and filtering, and the design of electronics for laser stabilization and control. He has played a leading role in the development of the AROMA technology including the design of critical optical and electrical components, developing computer control and analysis software, designing and implementing experiments to improve the performance of the system.

He has more than 10 years of experience in the development and deployment of robust analytical instrumentation for ambient chemical analysis. He has led large area ozone precursor studies, performed emergency response and triage monitoring campaigns, and supervised long-term field deployments in oil fields. Dr. Miller is the holder of multiple patents in the field of advanced chemical analytics and sensing.

#### Positions and Employment

2013-	Chief Executive Officer, Entanglement Technologies, Inc.
2011-2013	Research Scientist, Entanglement Technologies, Inc.
2010-2011	Consultant, Entanglement Technologies, Inc.
2007-2011	Graduate Research Assistant, Stanford University
2004-2007	Graduate Research Assistant, California Institute of Technology
2000-2003	Undergrad Research Assistant, Princeton University

#### **Selected Peer-reviewed Publications and Patent Citations**

A. Miller, B. Richman, C. R. Viteri, J. McKeever, "Selective cavity-enhanced trace gas detection via diffusion time-of-flight," SPIE Proc. 8358, (May 1, 2012) doi:10.1117/12.919312

Anthony Miller and Jason McKeever, "Device and Method for Cavity Detected High-Speed Diffusion Chromatography," U.S. Patent Application No. 13/871421, filed Jul. 28, 2011.

Michael Armen, Anthony Miller and Hideo Mabuchi, "Spontaneous dressed-state polarization in the strong driving regime of cavity QED," Phys. Rev. Lett. 103, 173601, (2009).

Martin C. Fischer, Tong Ye, Gunay Yurtsever, Anthony E. Miller, Maria Ciocca, Wolfgang Wagner, Warren S. Warren, "Two-photon absorption and self-phase modulation measurements with shaped femtosecond laser pulses." Opt. Lett., Vol. 30 Issue 12 Page 1551 (June 2005).

Anthony Miller. "Suppression of tensor decoherence in QND measurements of atomic ensembles." Ph.D. Thesis. Department of Applied Physics, Stanford University 2011.

## Entanglement Technologies

### Qualifications

Entanglement Technologies, Inc. is a Delaware C corp focused on the development of high-performance analytical instrumentation. Entanglement Technologies' will deploy the AROMA to evaluate and characterize sources of environmental pollution. Instrument setup, placement, and sampling system construction will be performed by Entanglement Technologies staff. The AROMA technology has been compared to EPA Method TO-15 analytical results for soil gas (with EPA region 9 and ESTCP) and HAPSITE (ESTCP) analysis for sanitary sewer headspace. Long-term side-by-side evaluation of the AROMA technology has been performed by the Bay Area Air Quality Management District (BAAQMD) with excellent agreement with a fixed-site, dual-column, auto-GC for BTEX analysis. Entanglement Technologies' team has developed significant experience through demonstrations with the EPA ORD, Region 9 EPA, ESTCP, GSI inc., Stanford University, University of Kentucky, Colorado Department of Public Health and Environment, etc. Entanglement Technologies has extensive experience with air quality monitoring in Texas working with the City of Houston, City of San Antonio, and Harris County Pollution Control Services.

### Selected Experience

#### Hurricane Harvey Monitoring, Houston TX:

The AROMA analyzer was deployed to Houston in the immediate aftermath of Hurricane Harvey to provide rapid response assessment of chemical impacts from the hurricane. The mobile monitoring campaign identified multiple chemical releases, including the large benzene release in the Manchester Neighborhood. Real-time chemical analysis data and coordination with city agencies allowed efficient allocation of city resources and the determination of appropriate protective action

#### Emergency Response, ITC Fire, Houston TX:

Emergency response chemical screening and monitoring services were provided in the City of Houston and Harris County. Entanglement Technologies provided the AROMA-VOC analyzer for installation in Houston's Mobile Atmospheric Monitoring Laboratory (MAML), instrument operation, project planning and site selection guidance, and data interpretation to the Houston Health Department, emergency response coordinators including the Fire Chief-in-Charge, and multiple environmental advocacy groups (primary clients). The analyzer was deployed to characterize plume extent, identify peak plume concentrations, provide protective down-wind monitoring to inform evacuation and shelter-in-place decisions. Peak benzene concentrations of 495 ppbv were detected and the plume was still detected at ~5x background concentrations 12 miles downwind of the ITC facility.

#### Large Area Ozone Precursor Assessment, San Antonio TX:

The City of San Antonio Health Department commissioned Entanglement Technologies to add critical measurement data to assist in determining the impact of ozone precursor transport on formation of ground-level ozone within Bexar County and to identify if any regions were increased emitters of ozone precursors. Over the course of 10 days, Entanglement Technologies collected speciated VOC and NOx data covering up and down-wind pathways across approximately 3000 miles of roadways. Entanglement Technologies was able to attribute emissions to sources and regions, using the AROMA Investigate data analysis software.

#### Camp Fire Ambient Impact, Burlingame CA:

The AROMA chemical vapor analyzer was deployed to provide continuous air quality assessment in the San Francisco Bay Area during the Camp Fire that decimated Paradise, CA and surrounding forest. Significantly elevated concentrations of toxic and highly reactive VOCs (most notably benzene and isoprene) were detected during the active periods of the fire when meteorological conditions brought the smoke to the San Francisco Bay Area (150 miles distant from the monitoring location.)

#### Superfund Environmental Site Assessment, CA:

Entanglement Technologies provides site assessment and characterization services at multiple Superfund Sites as a subcontractor on EPA supervised cleanup, mitigation, and remediation sites. In this capacity we provide mobile laboratory services to screen for high toxicity chemicals in indoor air, soil gas, and sanitary sewer headspace. Analysis is provided in situations where regulatory action levels are below 1 ppbv.

#### **AROMA Chemical Vapor Analyzers**

AROMA analyzers are sensitive, multi-analyte, real-time chemical analyzers specifically designed for field deployments in challenging environments. AROMA is an innovative combination of optical and signal processing methodologies, developed for quantum metrology and engineered quantum systems, and advances in chemical separation and analysis. At the core of the analyzer is a high-performance cavity-locked, frequency-agile cavity ring-down spectrometer (CRDS), which has matched the world record's benchtop for CRDS performance in a compact mobile system. This CRDS system delivers MDALs as low as  $1.2 \times 10^{-12}$  cm/Hz<sup>1/2</sup>. The broad-spectrum CRDS engine when combined with a low-cost, ramped thermal desorption front-end provides outstanding chemical sensitivity, and simple drift-free operation. More importantly, AROMA systems deliver continuous, unattended operation in harsh field conditions, with calibration-free performance for months on end.

AROMA has two modes of operation: RapidScan and LabScan. RapidScan is a direct spectroscopy mode, where a sample is directly analyzed by the CRDS core. This allows for real-time measurements of individual small molecules (ex. methane and ethylene oxide) and large molecule compound classes (ex. alkanes, aromatics, dienes) every 5 seconds at part-per-billion (ppb) detection limits. Operating in RapidScan mode is especially powerful for identifying areas of concern to be further evaluated by LabScan mode. The LabScan operating mode utilizes the separation front-end before CRDS detection, providing near real-time measurements (analysis in minutes) of a wide variety of volatile organic compounds (VOCs) at detection limits as low as 2 parts-per-trillion (ppt).

#### **Proposed Scope of Work**

For this work, AROMA-ETO will be deployed by Entanglement Technologies personnel to specifically measure 3 hazardous air pollutants (HAPs) of concern in the greater Houston area: ethylene oxide, 1,3-butadiene, and acrolein. Entanglement Technologies will perform an initial 30-day broad area mobile survey with AROMA to identify chemical blind spots in the four communities. Over the course of the 3 years, Entanglement Technologies will return to perform 3 additional 10-day surveys to track pollution sources and exposure over time.

# CBO STUDY AREA INFORMATION

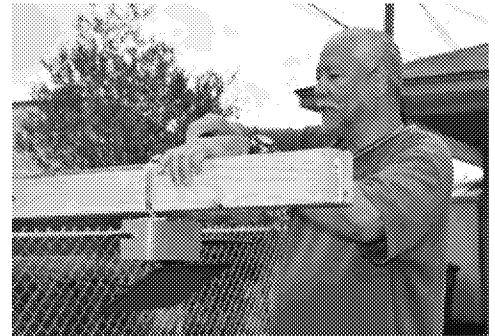
# PLEASANTVILLE

## Achieving Community Tasks Successfully (ACTS)



### Who is ACTS?

ACTS is a community-based nonprofit organization that seeks to leverage citizen science, training, and community engagement to address both environmental and social justice.



## Community Profile

- First planned Black Community in Houston
- 2 miles from Houston Ship Channel
- 98% Black and Hispanic
- Total Population (2019): 3,759
  - 30% under aged 18 years
  - 14% aged 65 years and over
- Median household income: \$40,796
  - Total households: 1,393
- 27% Families live below poverty level

## Community Action Plan Priorities

- 1) **Community Air Monitoring:** Develop a long-term plan that provides structure, ensures data accuracy and educates the community of Pleasantville regarding air quality.
- 2) **Baseline Health Survey:** Conduct a baseline community assessment for public health emergency response and disaster preparedness.
- 3) **Community Digital History:** Preserve our community history by creating a digital history of Pleasantville that documents both social and environmental history.
- 4) **Green Infrastructure:** Implement green projects that could assist with mitigation efforts related to storm water drainage, climate change impacts, cooling costs, and air quality.

### Pleasantville Achievements

- 1) ACTS Community air monitoring serves as EPA case study
- 2) Advocacy campaign in support of TCEQ placing regulatory air monitors in Pleasantville and 5th Ward
- 3) Addressing food insecurity during the pandemic by distributing food to Houstonians at Pleasantville community center
- 4) Challenging municipal settings designations to ensure historical contamination is cleaned up and not a risk to residents

ACTS website [www.acts-organization.org](http://www.acts-organization.org)

### Environmental Challenges

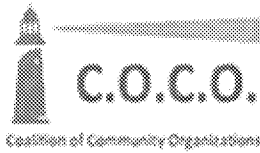




# FIFTH WARD

[www.coalitionofcommunityorganizations.org](http://www.coalitionofcommunityorganizations.org)

Coalition of Community Organizations (COCO)



Established: 2009

## Mission

COCO's mission is "educate to empower." We undertake a variety of initiatives to create healthier, sustainable communities.



## Community Profile

- One of Houston's original 6 wards
- 2 miles northeast of downtown
- 5 miles from Port Houston
- 94% Black and Hispanic
- Total Population (2019): 19,391
  - 25% under aged 18 years
- Median household income: \$27,668
  - Total households: 7,060
- 30% Families live below poverty level
- Barbara Jordan, Mickey Leland, George Forman are from 5th Ward

## Community Action Plan Priorities

- 1) **Block Captains:** Educate 5th Ward residents about health impacts of lead and other environmental pollutants.
- 2) **Lead Exposure:** Identify sources of lead exposure in the community and reduce risks to young children and pregnant women.
- 3) **Policy and Advocacy:** Organize, motivate, and conduct community outreach to demand equity, justice, and policies that improve environment, climate, health, and fair housing.
- 4) **Community Air Monitoring:** Develop community owned and operated low cost sensor network to understand air quality and community health impacts. Increase investigations of polluters and enforcement.
- 5) **Historical contamination:** Understand magnitude, location, and health impacts of historical environmental contamination in 5th Ward and advocate for clean up, reducing health risks, and accountability

### 5th Ward Strong

- 1) Ongoing advocacy efforts to understand health impacts and demand accountability for Union Pacific Railyard creosote contamination
- 2) Soto Concrete facility permit withdrawn
- 3) Citizen science work collecting environmental samples to test for heavy metals and creosote related chemicals
- 4) Disaster response assistance to residents and home repairs
- 5) Food distributions to help families during the pandemic
- 6) COVID-19 vaccines available in the community

### Environmental Challenges



# SUNNYSIDE

[www.facebook.com/SCROHouston](https://www.facebook.com/SCROHouston)

## Sunnyside Community Redevelopment Organization (SCRO)



The Sunnyside Community Redevelopment Organization seeks to create a healthy and sustainable community by advocating, educating, and empowering community residents.



## Community Profile

- Established in 1912
- Located in south central Houston, south of the Texas Medical Center
- 75% Black and 20% Hispanic
- Total Population (2019): 23,077
  - 30% under aged 18 years
  - 15% 65 years and older
- Median household income: \$27,954
  - Total households: 8,106
- 31% Families live below poverty level

## Community Action Plan Priorities

- 1) **Community Air Monitoring:** Improve environmental conditions in Sunnyside by developing a community owned and operated air monitoring network.
  - Collaborate with City and County pollution control agencies to increase investigations and enforcement of environmental pollution
  - Identify and assess areas with high hazardous and criteria air pollutant levels
- 2) **Public Safety:** Improve public safety in Sunnyside
  - Work with Greater Houston LEPC to develop an emergency response plan
  - Create a Citizens Corps Council for neighborhood safety and strategic planning for community preparedness
- 3) **Improve Health:** Increase accessibility to health care services and address health disparities in Sunnyside
  - Improve asthma, allergies, and baseline health

## Sunnyside Strong

- 1) Deployed SCRO community air monitoring network in 2021
- 2) Monthly food distributions to help families with food insecurity in Sunnyside
- 3) SCRO made COVID-19 vaccines available to the community through local churches
- 4) SCRO Board Member is a member of the Greater Houston LEPC
- 5) SCRO Board Member active participant in Houston Asthma Coalition environmental justice working group

## Environmental Challenges



## Maps Attachment

Figure 1. Location of Houston Data to Action communities and distribution of priority industrial facilities reporting release of ethylene oxide, 1,3-butadiene, formaldehyde, and acrolein to Toxic Release Inventory from 2017-2020 in Harris county for surveillance.

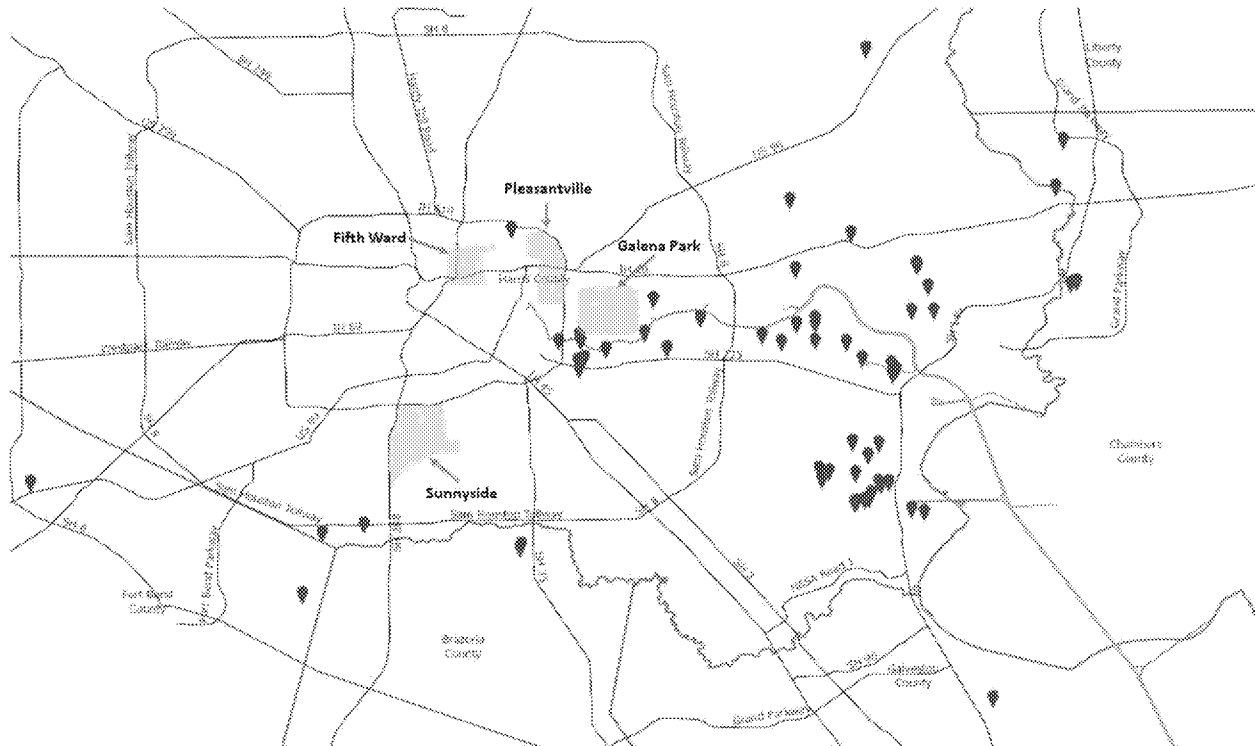


Figure 2. Distribution of All Releases in 2020 from Toxic Release Inventory Facilities in Harris County

